MEDICAL LIBRARY

SEP 29 1947

BRITISH MEDICAL JOURNAL

JOURNAL OF THE BRITISH MEDICAL ASSOCIATION

SATURDAY SEPTEMBER 13 1947

TABLE OF CONTENTS

Early Diagnosis of Cancer of the Oesophagus and Stomach
SIR HENEAGE OGILVIE, K.B.E., M.Ch., F.R.C.S. 405

Public Health—Berlin, 1946 JAMES MELVIN, C.B.E., M.C., M.B. 407

Changes in Blood Phosphate after Ingestion of Glucose and Fructose in Sprue L. P. R. FOURMAN, M.D. 411

H. Influenzae Meningitis in Relation to Treatment
J. THOMSON, F.R.C.P.Ed., LAETITIA M. BRUCE, M.B., and M. G. GREEN, M.B. 414

Balantidial Dysentery in Rodriguez and its Treatment with Mercury Biniodide M. SHUN-SHIN, M.B. 417

MEDICAL MEMORANDA

Spontaneous Haemopneumothorax. J. K. McMYN, M.B. 419

Unusual Case of Concealed Haemorrhage. W. ALFORD TAYLOR, M.B., and GORDON DUTTON, M.B. 419

GENERAL ARTICLES AND NEWS

RECRUITMENT AND TRAINING OF NURSES 426
CHANGES IN FOOD CONSUMPTION 427
BRITISH ASSOCIATION MEETING 428
INTERNATIONAL CONFERENCE OF PHYSICIANS 430
UNIVERSITIES AND COLLEGES 436
MEDICAL NEWS 438

REVIEWS

The Fallopian Tubes 420
Malnutrition 420
Male Fertility 420
Biochemistry of Tumours 421
Books Received 421

OBITUARY

L. Carnac Rivett, M.Chir., F.R.C.S., F.R.C.O.G. 435
John Marshall Cowan, M.D., D.Sc., LL.D. 435
S. H. Daukes, O.B.E., M.D., D.P.H. 435
A. J. Brock, M.D. 436
Ernst Laqueur 436

LEADING ARTICLES

Cuts in Rations 422
The Future of Nursing 422

ANNOTATIONS

Subclinical Poliomyelitis 423
Cancer Mortality 424
The Health of Berlin 425
Sleep-walking 425

REPORTS OF SOCIETIES

SOCIETY OF MEDICAL OFFICERS OF HEALTH 431

QUESTIONS AND COMMENTS

Treatment of Shock—Rheumatism and the Weather—Angina Pectoris—Zinc-fume Fever—Thumb-sucking—Terminating an Artificial Pneumothorax—Tremor of Hands—Staining Films of Vaginal Discharge—Ringworm of Scalp—Poliomyelitis and Chlorination of Water—Chemical Contraceptives—Universities and Colleges—Correction 439–40

SUPPLEMENT

HEARD AT HEADQUARTERS 65
CORRESPONDENCE 65
ASSOCIATION NOTICES 68
TRADE UNION MEMBERSHIP 68

CORRESPONDENCE

Medicine in the United States. H. R. WAINERDI, M.D. 431

Poliomyelitis. MYRTLE M. HUTCHINS, M.R.C.S.; J. M. ALSTON, M.B. 431

Leprosy and its Problems. J. B. DAVEY, M.B.; GEORGE CAMPBELL, M.D. 432

"Mushroom" Poisoning. C. THACKRAY PARSONS, M.D. 432

Milk Certificates. K. F. POLLACZEK, M.D. 432

Pure Anti-E Agglutinin in the Serum of an Rh-negative Woman. R. H. MALONE, M.D. 433

New Treatment of Rheumatoid Arthritis. M. D. WARREN, M.B. 433

Causalgia of the Face. C. H. CULLEN, F.R.C.S. 433

Acute Porphyria. LEO RAU, M.D. 433

Mind and Matter. E. R. BANNER, M.B. 433

Population Problems. W. R. E. HARRISON, M.R.C.S. 434

Ourselves and the Russians. C. M. BEADNELL, M.R.C.S. 434

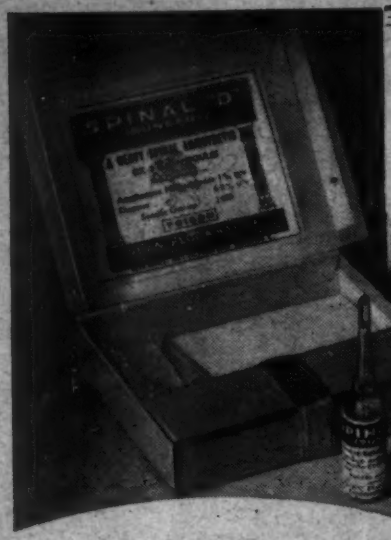
Epidemiology Section 436

BRITISH MEDICAL ASSOCIATION, TAVISTOCK SQUARE, LONDON, W.C.1

No. 4523, WEEKLY, PRICE 1/6

Copyright

REGISTERED AS A NEWSPAPER



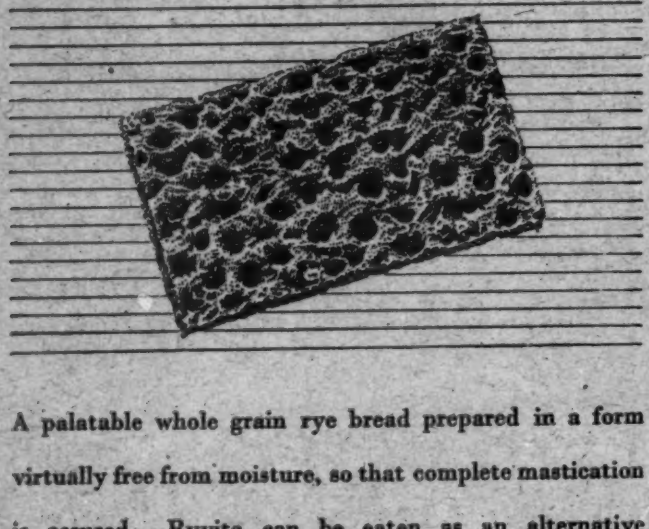
Safety in Spinal Anaesthesia

Amethocaine hydrochloride in hyperbaric solution is rapidly gaining in popularity as a spinal anaesthetic, some leading authorities claiming that it provides unequalled anaesthesia for routine use.

SPINAL "D" (Heavy) is a hyperbaric solution of amethocaine hydrochloric for inducing spinal anaesthesia below the diaphragm and which is enjoying the same confidence placed by the medical profession in the other world-famous Duncan, Flockhart anaesthetics.

DUNCAN, FLOCKHART & CO.

EDINBURGH LONDON



A palatable whole grain rye bread prepared in a form virtually free from moisture, so that complete mastication is assured. Ryvita can be eaten as an alternative to other breads. Many find that its characteristic flavour stimulates appetite. Supplies unfortunately are still restricted and subject to points, but we are doing our best.

RYVITA

SALT'S STILL SUPPLY

SALT'S wish to announce that, notwithstanding the present restrictions and labour shortages, they still continue to make and supply

SURGICAL BELTS to individual measurements for Board of Trade Approved list of conditions

ELASTIC HOSIERY in all Thread Elastic qualities (Silk not now being available)

TRUSSES for all types of hernia to individual requirements.

ALSO ARTIFICIAL LIMBS AND SURGICAL APPLIANCES

Appointments at London address: 1, *STANLEY HOUSE*, 103, *Marylebone High Street, London, W.1*
Tel Welbeck 3034

SALT & SON LTD · BIRMINGHAM 2

LEGE TOTUM

SI VIS SCIRE TOTUM

The scope of the M.I.A. is fully described in this booklet sent free on application. Remember over £175,000 has been saved to the medical profession by means of special rebates and £75,000 paid to medical charities.

LIFE ASSURANCE. Whole Life and Endowment Assurances. Children's Deferred and Educational Policies. Annuities.

SICKNESS AND ACCIDENT. Permanent Contracts. Special terms for Serving Officers.

HOUSEHOLD AND PRACTICE. Policies arranged to meet all requirements.

MOTOR CAR. Special Doctor's Policy. Complete cover, low rates.

Special Loan facilities exist for the PURCHASE of MEDICAL PRACTICES and HOUSE PROPERTY

MEDICAL INSURANCE AGENCY LIMITED

B.M.A. House, Tavistock Square, London, W.C.1.

or 6, Drumsheugh Gardens, Edinburgh.

MIA

Chairman: James Fenton, C.B.E., M.D., D.P.H.
Manager: A. N. Dixon, A.C.I.I
Hon. Sec.: Henry Robinson, M.D., D.L.
Manager for Scotland: R. C. Fergusson.

BRITISH MEDICAL JOURNAL

LONDON SATURDAY SEPTEMBER 13 1947

THE EARLY DIAGNOSIS OF CANCER OF THE OESOPHAGUS AND STOMACH*

BY

Sir HENEAGE OGILVIE, K.B.E., M.Ch., F.R.C.S.

Surgeon to Guy's Hospital

We know the main facts about cancer. We know it is the chief cause of death in men and women in the years after 40—the time when they have established a place in life, a home, a reputation, when they are most useful to their profession and their country and most necessary to their families. We know that at first it is not a tumour but an insensible transformation of the cells in some part of the body to a structure that is a caricature of the normal rather than something new or different; that this new tissue has no nerve supply, and that it produces no inflammatory reaction in the normal parts surrounding it—in other words, that it is entirely painless, and in most cases entirely symptomless. We know that, for purposes of recording, cancers can be sorted into three stages, based on their gross naked-eye pathology: Stage I, in which there is a local growth only; Stage II, in which as well as the local growth there are early metastases in the nearest lymphatic glands or in tissues immediately adjacent; and Stage III, in which the primary growth or the metastases are fixed, or more distant organs are involved. We know also that in those parts of the body which can be effectively irradiated, or where a radical operation that satisfies pathological criteria can be performed—the breast, the colon, the rectum, and most parts of the skin—the five-year cures in Stage I are 80 to 90%, in Stage II about 50%, and in Stage III not more than 10%.

Radiation will improve, but it is doubtful whether that improvement will be dramatic. Radical surgery can hardly get more radical, for the limitations now set are not the result of timidity or lack of enterprise but are rather due to Charles Mayo's stipulation that among the results of successful surgery should be a live patient. If, therefore, we are to get more cures it can only be by finding more patients in Stage I, the stage of silence.

Two of the most malignant of all growths are those of the oesophagus and the stomach. Cure of oesophageal cancer is almost unknown. Cure of gastric cancer is sometimes seen, but in not more than 5% of those cases that come to a surgical clinic; yet it is the commonest of all malignant growths, and the chief cause of cancer deaths in all civilized countries in which records are kept. There are no signs or symptoms by which we can diagnose these diseases in their early stages, but are there any which should raise our suspicions and allow us to start those investigations that will give the answer in time? It is those early signs that are the hardest to discover, and many of you may have observed some warning sign that the rest of us have not noticed. If you have I hope that you will share it.

* Substance of lecture delivered at Mount Vernon in 1946.

Warning Signs

Those who were in the first World War will remember the "stand to" in the front trenches an hour before dawn, the hour when mists and half-shadows conceal familiar objects, the hour when the enemy may creep unseen, when a suspicious alertness is the only way to safety. We should all "stand to" over our patients who have passed the forty mark, suspicious of the enemy who may even then have established a footing unknown. We should beware of the man who starts to look ill, to get a little paler, to lose weight, to turn down the second round of golf or the last rubber at bridge, to miss his second helpings, and to become "choosy" about his diet. The mind or body of a healthy man does not tire suddenly and perceptibly be he forty or four-score, and the change from the "Wimbledon Tiger" to the steady back-line six-set tournament player of forty years later is imperceptible. Habits of meals and bowels do not change without reason; but it is the neurotics who look at their faces and tongues daily in the mirror and weigh themselves weekly, and with normal men we have to rely on our own observations or the reports of their wives or friends. We may first suspect loss of weight in our friends by the loose collar, the baggy waistcoat, loss of strength by the tendency to take a taxi instead of a walk, the lift instead of the stairs. These things we can check by a few questions. Have they noticed any difference in the fit of their clothes? Can they do all the things they did six months ago? Is there any alteration in their appetite, the amount they can eat at a time, their bowel habit? Have they started to suffer from wind lately? Some men are windbags all their lives, but a previously unexceptionable member of society who starts suddenly to belch or rumble probably has cancer. Have they for the first time taken to powders or medicine?

To start with we keep our suspicions to ourselves, for we do not wish to earn a name for being alarmists or to involve our patients in needless expensive investigations, but we must keep a constant watch on the deviation we have noticed, and we should start a weight chart. There are many groups of disease, and each has its general characteristics. The colics from stone come like stabs across the sky of otherwise excellent health. The infections are incidents of varying duration with a rise and fall. Cancer is progressive; the paleness increases, the tiredness gets worse, the weight continues to fall. And there are certain tests we can carry out without revealing our suspicions. If we suspect carcinoma of the oesophagus we can order a bulky cachet of "medinal" and aspirin and stand by while they swallow it; if carcinoma of the stomach we can ask them to share a bulky meal. And we can put

them on a meat-free diet and have a stool examined for blood; a negative result makes a cancer anywhere in the alimentary tract very unlikely. But if symptoms continue and progress, if we see that slight but steady deterioration that whispers "cancer" to the trained eye, we must insist upon a complete investigation. We may be wrong, but if we always wait till we are right we shall always be just too late. A live mistake is better than a dead certainty.

Cancer of the Oesophagus

Cancer of the oesophagus is predominantly a disease of men, and of old men—that is, 60 and over. It is hardly ever diagnosed till it is well advanced, for it is entirely silent. The mouth and the stomach form their opinions about food and reject what they do not like. The oesophagus is insensible and uncomplaining. A carcinoma usually produces no recognizable obstruction till it has completely encircled the lumen; while even one centimetre of normal wall remains swallowing usually appears to be normal. Once the growth completely encircles the gullet dysphagia appears and progresses rapidly, first for solids, then for soft foods, then for liquids. Late signs, palsy of the left recurrent laryngeal nerve, involvement of the trachea or bronchus, glands in the neck, Horner's syndrome, follow in turn.

There are no early symptoms, apart from the vague ones I have outlined, and questions to all my friends have produced only three observations with any bearing on the subject. First, that there is occasionally some oesophagitis above a non-obstructive growth, giving a burning feeling deep in the throat "as if they have swallowed some very hot tea." Secondly, that a partial obstruction may suddenly be complete to some usually large bolus, so that patients come with a story of a "bone stuck in the throat." Both stories call for *x*-ray examination and oesophagoscopy. Thirdly, that the early dysphagia of a slightly stenosed growth is often reported as "indigestion," which leads to investigation by a barium meal and a report of a normal stomach that allays suspicion until too late. It should be the rule at every barium meal that the first swallows are watched in their passage down the oesophagus. One swallow may not make a summer, but it may diagnose carcinoma of oesophagus or cardia while there is hope.

Cancer of the Stomach

Cancer of the stomach is also a disease of men, but it occurs much earlier, many coming soon after 40, and not a few in the thirties. The classical symptoms are epigastric pain unrelieved by alkalis, vomiting, anorexia, anaemia, loss of weight. About half the cases we see give this picture, but they are already far advanced. Very many are entirely silent till their terminal stages.

A celebrated American gastric radiologist swallowed a cup of barium to try out a newly installed apparatus; the film, to the horror of the radiographer who developed it, showed a large gastric carcinoma. Within the last five years two very famous surgeons have suddenly discovered that they had a carcinoma of the stomach by feeling the mass bump against the operating table. So silent is the lesion in the stomach that growths often reveal themselves by syndromes that do not seem to be gastric. Lesions near the cardiac orifice cause symptoms closely resembling those of oesophageal obstruction. A barium swallow may appear to pass normally down the eosophagus, and if it is not followed by a barium meal a growth in the stomach may be missed. Growths near the fundus are very difficult to demonstrate radiologically, and unless the fundus is examined with the patient in the Trendelenburg position, so that the barium fills the whole cardiac region, small irregularities cannot be seen, and even large ones may pass unnoticed. In many cases the barium is held up at the lower end of the oesophagus, but as the constriction is smooth and funnel-shaped a diagnosis of cardiospasm is made. This is one of the commonest mistakes in gastro-intestinal radiology, and one of the most tragic, for while the patient is being treated with bougies, or, as happens not infrequently, running the whole bewildering gamut of psychological investigation, the growth below the diaphragm is passing insidiously from the operable to the inoperable stage. Cardiospasm is usually a disease of younger people, and by the time it has progressed enough to bring the patient up for examination has a long history of periodic bouts of dysphagia and of remissions. In cardiospasm the oesophagus is seen in the radiograph to be considerably dilated, at least to the size of a normal caecum; above a growth the oesophagus may be filled to capacity, but it is rarely dilated in the true sense, and it does not exceed a candle in diameter. A diagnosis of cardiospasm should never be made in an adult with a short history till the possibility of a high gastric cancer has been excluded.

In other cases profound anaemia is the only recognizable symptom, and the diagnosis of pernicious anaemia is made. In yet others a small and silent growth sends out showers of malignant cells into the peritoneal cavity that seed themselves in the pelvis, giving rise to a pelvic shelf and rectal obstruction or, in the female, to bilateral implantation carcinoma of the ovary.

Early diagnosis, once more, is the reward of a suspicious mind. Does a man who has eaten like a horse till the age of 40 suddenly get indigestion, though his job, his habits, and his wife remain the same? No! Does gastric ulcer start after 40? Never—well, hardly ever! Does the tired business man come back tired after a week at Westward Ho? Not if his tiredness is no more than business worry. These people want investigation before, not after, they start a course of diet and medication on the advice of the chemist, the man in the train, or the writer of the health column in the evening paper. The seller of alkalis is the undertaker's best friend. Investigation means observing these doubtful cases closely and anxiously, inquiring about appetite and comfort at meals; whether they have a sense of fullness when the meal is half done or belch foul-smelling gas—two symptoms highly suggestive of carcinoma; it means weighing them weekly, examining their blood and their stools, testing their vomit for free hydrochloric acid and blood; if suspicion continues it means a barium meal, and if the barium meal is inconclusive it means gastroscopy. The gastroscopist has to look at a great many stomachs before he knows his job, but when he does he misses very few carcinomas of the stomach.

Relation of Gastric Ulcer to Gastric Cancer

One of the most important services that gastroscopy can perform is to decide whether a particular ulcer is innocent or malignant. There has been much controversy about the relationship between gastric ulcer and gastric cancer, but it is undoubtedly one of the most important aspects of the question that concerns us to-day, the early diagnosis of malignant disease of the stomach. We must consider two things: the gastric ulcer that undergoes malignant degeneration, and the gastric cancer that resembles gastric ulcer.

Authorities vary greatly in their estimate of the number of ulcers that become malignant. On the pathological side, from the investigation of necropsy and operation specimens, estimates vary between the 4 or 5% of most British pathologists and the 50% of McCartney of the Mayo

Clinic. Surgeons for the most part accept the lower figure, but Maingot in a recent article has stated that in about 10% of the cases of cancer of the stomach that come to him the change has been implanted on a previous gastric ulcer.

I personally believe that the number is very low indeed—so low that I should never use the argument of impending malignancy to bully a patient with an ulcer that had all the clinical indications of innocence into an operation she did not want to have. No surgeon in a lifetime has enough personal cases to allow him to lay down the law, but I must place on record that in twenty years of gastric surgery I have never seen a gastric ulcer become malignant. I feel that Maingot's experience is a piece of unparalleled bad luck in the practice of an otherwise very lucky man.

Cancer mimicking ulcer, on the other hand, is seen by every surgeon several times a year. It is necessary to remind ourselves that cancer of the stomach, while it is usually a very rapid disease, may be as slow as a scirrhous tumour of the breast, going on for ten years with little change; that patients with slowly progressing cancers may have a good appetite and free hydrochloric acid, and that they may lose their symptoms for a time and put on weight on a gastric diet. These slow cancers are digested in their central necrotic parts by the gastric juices, and, whether at operation or necropsy, may have very much the appearance of an indurated peptic ulcer. But in these cases, if we go into the history carefully, we find that the gastric symptoms have started suspiciously late in life, that though they may have gone for some years they have been steadily and slowly progressive, and that the remissions have not been periods of complete health but of lessened discomfort. The true ulcer usually starts in the twenties, and, in its long history before its final cure by medicine or surgery, has many remissions of months' or years' duration. I know that prolonged irritations and the presence of scar tissue may give rise to a cancer, but in a lifetime I have seen little evidence that they do so except in squamous epithelium.

On the other hand we need not be too philosophic. A large chronic gastric ulcer causes constant misery even if it does not cause cancer, and gastrectomy is one of the most satisfactory and, in practised hands, one of the safest operations in surgery. An ulcer in the bucket has never been known to become malignant.

We must suspect malignancy or a premalignant character in all gastric ulcers first appearing after the age of 40; in all those in the prepyloric inch, and in other parts of the stomach that are not on or adjacent to the lesser curvature; in those exceeding an inch in diameter; in those that do not heal after a month's strict medical treatment in bed and in which occult blood is still found in the stools after such treatment. All these should be submitted to surgery without further delay.

Conclusion

I would conclude by repeating that the early diagnosis of cancer in any internal organ depends, in the main, on clinical judgment, on the early confirmation of what can, in most cases, be no more than a suspicion. We can all remember instances of a diagnosis of malignancy made on clinical grounds, of repeated examinations by experts giving repeated denials, of confirmation coming too late for curative treatment. When cancer is in question we should accept the negative warning of a penny weighing-machine in preference to the positive reassurance of the ten-guinea Harley Street expert. And if our suspicions continue, if the weight continues to fall, we must insist on an exploration. There is more rejoicing in heaven over the one laparotomy that fails to find cancer than over the ninety-and-nine (positive ones) that find it too late.

PUBLIC HEALTH—BERLIN, 1946

BY

JAMES MELVIN, C.B.E., *M.C.*, T.D., M.B.

Chief Control Officer, Public Health Branch, Military Government, British Troops, Berlin

[ABRIDGED]

From the entry into Berlin in July, 1945, to the end of the winter of 1945–6 the concern of the Military Government from the health and welfare point of view was almost entirely that of first-aid to a demoralized, apathetic, depressed, and needy population. A factual account of the conditions to the end of 1945 has been given by P. G. Horsburgh and H. A. Raeburn.[1] History has shown that in the train of the devastation caused by wars come epidemics which have usually claimed more victims than the wars themselves. A winter plan of epidemic prevention was therefore of first importance. The situation was complicated by vast movements of population, refugees in tens of thousands moving in all directions, but chiefly from east to west. Small groups of these, infected with typhus, dysentery, and typhoid, were a potential menace to all concerned. Barriers in the form of camps for refugees had to be established. Medical teams, hospital arrangements, disinfestation, feeding, and transport all had to be organized, and organized quickly.

Public Health Control

The Allied Control Authority takes the place of the Government in Germany, and the Public Health Control Officer of the Military Government therefore acts in the capacity of an official of the Ministry of Health, except that he has overriding powers to ensure that certain aspects of local government are carried out as ordered. Berlin is under a quadripartite government, and each of the Allies has a Public Health Branch of Military Government controlling all the medical and health services of the 20 "Bezirks" (corresponding to metropolitan boroughs in London) into which Berlin is divided. The Public Health Branch of the British Military Government consists of four officers assisted by clerks, and all the medical and auxiliary services in the four Bezirks which it includes come under its control. Direction of the doctor is within its province, and on the whole the doctors, instead of resenting this, rather look to the Branch to help them. In the British sector there is one doctor to 850 population, but in an Allied sector only one to 2,500; so that, allowing for the fact that more of the hospitals in proportion to the population are in the British sector, some general practitioners must be ordered to work in other Bezirks. There will be no compulsion upon the doctor to move his home to the other Bezirk, but only his field of employment, and the direction will be limited to "squatters" and the newly qualified. The effective measure for securing direction is through control of insurance contracts, 90% of the population being insured.

The Berlin Hospitals

The hospitals of Berlin had been reduced by May, 1945, to some 30,000 beds. By August they were up again to 38,000. The winter target was 50,000, and by the end of December 46,000 had been reached. For the British sector the target was 10,000, and the figure at the moment of writing is over 11,000. There are now practically twice as many hospital beds as in peacetime, but there are nearly three times as many sick—this with a population depleted

[1] *British Medical Journal*, 1946, 1, 423.

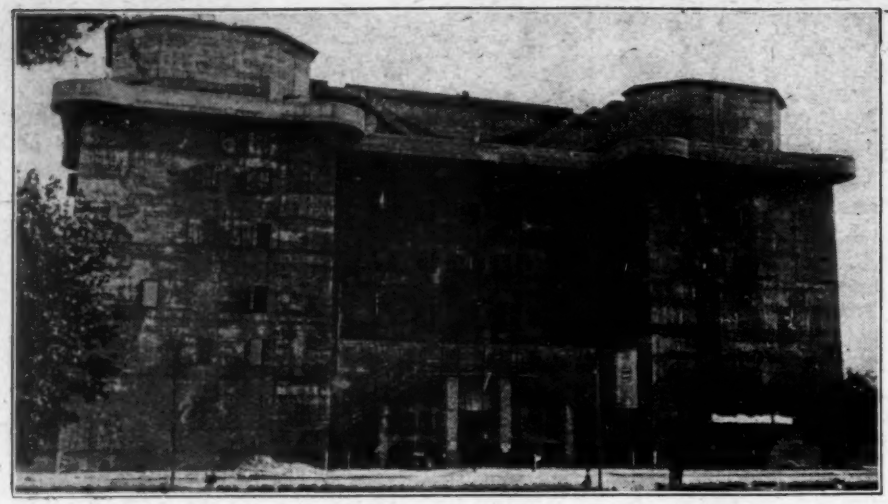


FIG. 1.—The Zoo Bunker, a large reinforced command post due to be blown up under the Potsdam agreement; destruction delayed that it may serve as an annexe to the Robert Koch Hospital.

to 70% of the pre-war figure. The proportion of hospital beds to the Berlin population is 15–17 per thousand, but only about one-third are in the condition which would be expected in a modern hospital. By December, 1946, temporary repairs were completed to 89% of the requirement, and permanent repairs to 70%. Some 38% of the hospitals were formerly schools, and plans are now being made to return these to their former use. The Grosse Halle at Spandau, a fine group of pavilion-like buildings, will form a hospital of about 2,000 beds divided into departments of medicine, surgery, gynaecology, and orthopaedics (Fig. 2).

The staffing of the hospitals has been a difficulty, because many of the supervisory doctors, being Nazis, have been removed. The British Military Government has made strenuous efforts over a period of 15 months to re-establish an organization of physicians and also associations of nurses and other auxiliaries, but so far this has been fruitless because quadripartite agreement could not be obtained. It would have been easy to establish these organizations in the British sector of Berlin, but it was obviously necessary to run Berlin as a city, and not as four separate cities, and eventual agreement, if and when obtained, will be well worth the time lost.

To visit the hospitals, however, and to see their work is one of the recompenses of a harassing day. Such courtesy and such keenness to listen, to demonstrate, and to co-operate are met with that considerable pleasure as well as educational value is found in these visits. The lack of sound administrators as well as mature specialists is a big problem. As denazification proceeds more and more doctors of the

FIG. 2.—A corner of the Grosse Halle at Spandau, which is to form a 2,000-bed hospital.

able type are thrown out, and we are left with the elderly who resisted Hitler, but whose work was so valuable that the Nazis did not get rid of them. There are in the hospitals and in the specialties some young men who will be good specialists in the future, but they are few and far between at present.

Equipment and Supplies

Hospital equipment and medical supplies when the Allies took over were, of course, in a state of great shortage. With the usual German initiative hundreds of small firms came into being, some of which made pharmaceutical products in their cellars. If it had not been for the activity of these "Rucksack" firms, as the Germans called them, in the early days our difficulties would have been much greater; the larger firms, owing to the disruption of their more intricate organization, were semi-paralysed. All this trade, however, must be brought to an end, at first by the Military Government, but at the earliest moment by the German representatives of the pharmaceutical trade and the local government Health Offices. In addition to pharmaceutical products large amounts of equipment and appliances have been brought in from the British zone, but, because of the policy of treating Berlin as one unit, they have been handed over to the central department and not allocated to the British sector only.

The Germans have been so cut off from the rest of the world that their medical men have been unaware of recent medical advances. German scientists, chemists, and doctors have not stood still, and they have several things to show for the betterment of mankind; but penicillin was generally unknown in Germany, and such discoveries as the Rh factor had not reached them. Extracts from medical literature have been presented to the Health Offices so that translations may be made for the medical profession. An article on the modern treatment of dysentery has probably contributed to the significant drop in dysentery incidence in Berlin.

Nutrition

The nutritional state of Berlin has been a cause of grave anxiety to the Allies. Cross-sections of the population have been examined at intervals of about three months. The rations in use in Berlin to-day are shown in the following table:

Ration Cards	Calories per Day	Entitled Persons
Group I	2,498	Heavy workers. Persons with active tuberculosis or severe anaemia, plus 0·5 litre milk daily
„ II	1,999	Moderately heavy workers. Persons with inactive tuberculosis, convalescents from serious illness, invalids in hospital, the last receiving also 0·5 litre milk daily
„ III	1,608	Normal consumers
„ IVa	1,388 (without milk) 1,786 (with milk)	Children up to 6 years Children up to 1 year
	1,653 (with milk)	Children from 1 to 6 years
„ IVb	1,487 (without milk) 1,619 (with milk)	Children from 6 to 9 years „ „
„ IVc	1,559	Children from 9 to 14 years
„ V		(Discontinued since March 1, 1947

Diabetics receive extra fat and meat, and less bread and sugar. Pregnant women from the fifth month are in Group II and receive half a litre of milk daily. Classes of the population which still give concern are young adolescents, mothers of young children, and people over 60, and efforts are being made to bring these up to a

higher category of ration. The International and the Swedish Red Cross have made valuable contributions in the form of additional supplies through the medium of communal kitchens catering for children and young persons. The British Commandant in Berlin (Major-General E. P. Nares) caused the distribution of one million Arctic packs (which had been designed for an invasion of Norway) on a city-wide basis to augment the ordinary ration of school-children and adolescents in the two winters. The packs contain pemmican, biscuits, chocolate, cheese, and other concentrated foods.

Tuberculosis

Pressing problems from the public health point of view are tuberculosis, venereal diseases, and diphtheria (at the moment adult diphtheria). Unless the increasing incidence of tuberculosis can be brought to a standstill the outlook for Berlin, and indeed for Germany and even for Europe, in the next ten years is going to be serious. There are in Berlin 70,000 cases, of which between 20,000 and 30,000 are active and infectious. The British Military Government has handed over the Luftkriegsakademie at Gatow for a tuberculosis sanatorium of 1,700 beds (Fig. 3), and the U.S.

FIG. 3.—Part of the Luftkriegsakademie, formerly a Service barracks, to be converted into a 1,700-bed tuberculosis hospital.

Government has handed over the Air School building at Wannsee, which will have a 2,000-bed capacity. The tuberculosis notifications in the British Sector and Berlin in 1946 were as follows:

FIG. 4.—Patients leaving to begin "Operation Sanatorium"—a three-months stay in hospital in Schleswig-Holstein.

A contribution from the British Public Health Branch to the tuberculosis problem in Berlin was the making of an arrangement with the Military Government authorities in Schleswig-Holstein to accept convalescent and sanatorium patients from Berlin in the summer of 1946. In July some 500 patients left Berlin in an ambulance train for a three-months stay in the sanatorium (Figs. 4 and 5). This operation was repeated monthly until October.

Other Communicable Diseases

Possibly the next most serious problem is venereal disease. In the latter months of 1946 the figures declined, but some of this decline is no doubt due to the treatment of gonorrhoea by penicillin. The steadily rising rate of syphilis gives a truer indication of the incidence. The number of fresh cases of syphilis in the British sector in January, 1946, was 165; this figure fell in the second quarter of the year, but rose again almost to the same level in the last months.

The incidence of diphtheria was highest in the British sector in January, 1946, with 291 cases and 25 deaths; in December of that year the cases still stood at 203 and the deaths numbered 16. In Berlin as a whole cases and deaths showed a general decline. There is compulsory inoculation of all children under 5. Inoculation on a voluntary basis after Schick-testing has been arranged for any of the adult

Notifications of Tuberculosis in 1946

	British Sector						Berlin					
	Tb. Lung		Tb. Other		Total		Tb. Lung		Tb. Other		Total	
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
January	364	136	5	8	369	144	1,208	753	75	63	1,283	816
Per 10,000 pop.	77	29	1	2	78	30	46	29	3	2	49	31
February	335	120	3	6	338	126	1,146	725	78	51	1,224	776
Per 10,000 pop.	78	28	1	1	78	29	48	31	3	2	51	33
March	292	128	21	7	313	135	1,401	803	180	60	1,581	863
Per 10,000 pop.	61	27	4	1	65	28	54	31	7	2	61	33
April	250	122	30	14	280	136	1,229	786	138	79	1,367	865
Per 10,000 pop.	54	26	6	3	60	29	48	31	5	3	53	34
May	248	133	27	18	275	151	1,332	731	160	90	1,492	821
Per 10,000 pop.	50	27	5	4	55	30	50	28	6	3	56	31
June	271	117	46	11	317	128	1,144	661	152	75	1,296	736
Per 10,000 pop.	56	24	9	2	65	26	45	26	6	3	51	29
July	378	110	49	16	427	126	1,412	587	228	73	1,640	660
Per 10,000 pop.	74	22	10	3	84	25	53	22	9	3	62	25
August	363	76	65	17	428	93	1,716	509	424	70	2,140	579
Per 10,000 pop.	71	15	13	3	85	18	64	19	16	3	80	22
September	275	68	59	11	334	79	1,230	427	281	46	1,511	473
Per 10,000 pop.	55	14	12	2	67	16	47	16	11	2	58	18
October	229	64	51	6	280	70	1,288	431	252	56	1,540	487
Per 10,000 pop.	44	12	10	1	54	14	48	16	9	2	57	18
November	271	69	58	8	329	77	1,252	454	230	43	1,482	497
Per 10,000 pop.	54	14	12	2	66	15	48	17	9	2	57	19
December	229	79	47	—	276	79	1,033	532	190	57	1,223	589
Per 10,000 pop.	44	15	9	—	53	15	38	20	7	2	45	22
Total	3,505	1,222	461	122	3,966	1,344	15,391	7,399	2,388	763	17,779	8,162
Per 10,000 pop.	60	21	8	2	68	23	49	24	8	2	57	26

The term cases indicates fresh notifications. By the end of the year the total notified cases in Berlin amounted to approximately 75,000. These are the figures produced by the Statistical Office and are therefore final and correct.

FIG. 5.—"Operation Sanatorium": Setting out on the ambulance train.

population particularly exposed to risk of infection.

Typhoid has steadily declined since the winter of 1945–6. It was decided that compulsory inoculation was essential, and a certificate of inoculation was made a qualification for the issue of a ration card. Typhus has disappeared from Berlin, which, considering the vast influx of refugees and displaced persons which took place throughout 1946, is a striking tribute to the effectiveness of the control measures and the efficacy of D.D.T. powder dusting. Dysentery is still present and will remain until the sanitary conditions of Berlin have considerably improved. The death rate has been alarmingly high in relation to the total incidence, probably owing to the general state of under-nutrition and lowered resistance of the population, but partly also to the defective knowledge that German doctors generally have of the modern treatment of bacillary dysentery. A decided improvement has taken place in the death rate in the British sector and in Berlin generally since the middle of 1946. Owing to the lack of fuel and soap the incidence of scabies has shown a progressive rise. Bathing establishments and treatment centres have been set up in each Bezirk of the British sector.

A further problem awaiting solution at the moment is represented by the large number of orthopaedic cases in the city. These amount to some 70,000, of whom 30,000 are amputees (the result of war wounds or air-raid casualties). The material for orthopaedic appliances and prostheses for amputees is not obtainable at the moment. An enterprising firm is ingeniously converting German aeroplane parts into a light and serviceable type of artificial limb, but this work is held up by lack of leather and special steel to make the fittings and joints.

FIG. 6.—Repaired hospital roof converted to a solarium.

Vital Statistics

The vital statistics for each month since the entrance of the Allies into Berlin (the figures for July, 1945, are not available) are given in the following table:

	Birth Rate per 1,000		Death Rate per 1,000		Infant Mortality per 1,000 Live Births	
	British Sector	Berlin	British Sector	Berlin	British Sector	Berlin
1945						
Aug. ..	15·0	12·2	54·0	62·9	231	658
Sept. ..	15·0	13·5	54·0	55·3	231	285
Oct. ..	13·0	10·0	54·0	51·5	183	245
Nov. ..	12·0	7·9	46·0	50·7	246	190
Dec. ..	7·5	6·7	46·0	48·9	246	158
1946						
Jan. ..	4·8	5·2	38·8	41·9	118	152
Feb. ..	5·1	5·3	32·9	37·0	94	152
Mar. ..	5·4	5·2	30·7	36·1	82	136
April ..	5·0	5·0	25·8	29·1	66	97
May ..	5·3	5·1	21·2	24·1	86	111
June ..	6·2	6·4	18·6	20·2	92	103
July ..	8·4	7·9	16·1	17·9	91	100
Aug. ..	8·7	9·1	15·0	15·9	100	106
Sept. ..	11·0	10·8	15·3	16·9	102	113
Oct. ..	9·7	10·2	16·4	18·6	116	114
Nov. ..	10·6	10·1	15·7	18·6	105	114
Dec. ..	9·9	9·8	20·6	23·2	98	160

The suicides in the British sector in 1946 numbered 285, and in Berlin 653. A large increase in the number of suicides in Berlin as a whole took place in December, 1946, and January, 1947; the total number in those two months was 252. The increase is said to have been due to the accentuation of misery caused by the cold.

No description of the work of Health Control in Berlin would be complete without reference to the Commander, Brigadier W. R. N. Hinde, D.S.O., D.D.M.G. Military Government, and to his staff and our colleagues in other departments of the Military Government. The British element in Military Control in Berlin is in fact a well-knit and hard-working team. Tribute must also be paid to our Allies, with whom we spend at least one whole day twice weekly. Last, but not least, a word must be said about the sound, democratically minded German official or civilian with whom we have to work. In a difficult position he is upright, hard-working, and trustworthy. There are others, it is true; but it is our job, and in fact our mission, to bring forward and encourage the former.

A council has lately been formed for the investigation of spastic paralysis and the welfare of the often forgotten victims of this condition. The British Council for the Welfare of Spastics proposes to act as an advisory and co-ordinating centre for all activities in England and Wales directed towards the treatment, the education, and the training of these afflicted people. Prof. J. M. Mackintosh is its chairman; Lord Horder is its medical vice-president, the other vice-presidents being Sir Richard Livingstone, the educationist, and Mr. Fred Messer, M.P. On its council the Royal Colleges, the British Medical Association, and a large number of other medical bodies and bodies ancillary to medicine are represented, and six Government departments have observers. In close association is the Scottish Council for the Care of Spastics, the president of which is Sir John Fraser. The Ministry of Education has drawn the attention of local education authorities to the new council, stating that "the problem of the education and treatment of children suffering from spastic paralysis has not hitherto been attacked in this country except as part of the provision for physically handicapped children, and in one or two instances in schools or units specially provided or organized for the purpose. The Minister is of opinion that there is scope for investigation, research, and treatment which the British Council is well equipped through its several committees to undertake."

No precise estimate of the number of children in this country suffering from spastic paralysis is available, but one figure mentioned on the basis of certain surveys is 10,000, and of this number it is supposed that rather more than a quarter are in the "mild" category and able to attend ordinary schools. In the U.S.A., where complete investigations have been carried out, it is said that, on the average, seven children with cerebral palsy are born annually in every 100,000 of the population.

The address of the British Council for the Welfare of Spastics is 34, Eccleston Square, London, S.W.1, and of the Scottish Council, County Buildings, Inverness.

CHANGES IN BLOOD PHOSPHATE AFTER INGESTION OF GLUCOSE AND FRUCTOSE IN SPRUE

BY

L. P. R. FOURMAN, M.D.

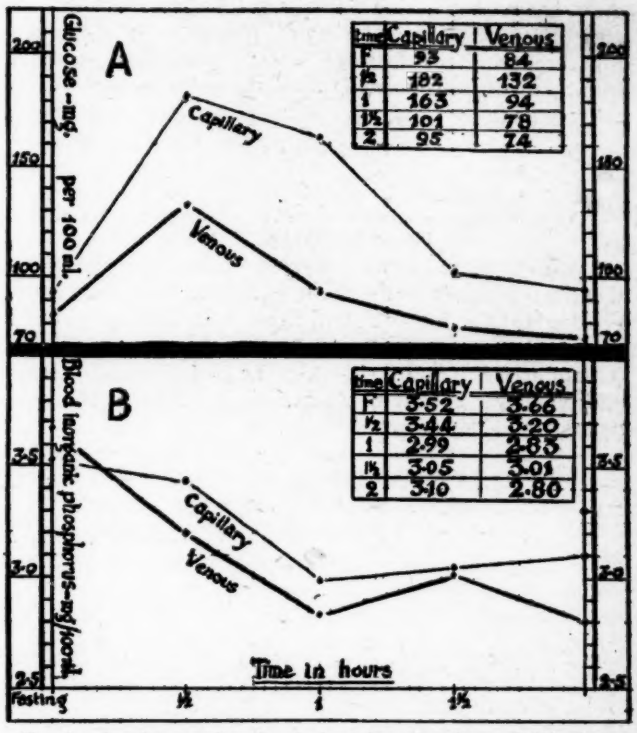
Late Major, R.A.M.C., Central Military Pathological Laboratory, India

When normal subjects are given glucose by mouth there is a fall in the plasma inorganic phosphate. This fall is related to the metabolism of glucose and not to its actual absorption, for it is also observed when glucose is given intravenously and after the injection of adrenaline or insulin (Peters and Van Slyke, 1931). Moreover, the absorption of glucose without utilization, as in severe diabetes (Hartman and Bolliger, 1925), does not lead to a fall in inorganic phosphate. The changes in serum inorganic phosphate during glucose absorption in sprue have been investigated by Hanes and Reiser (1940), who found that there was an abnormally small drop in the serum inorganic phosphate in sprue patients when glucose was given by mouth but that the normal drop occurred when the glucose was given intravenously. These findings seemed to reflect the poor absorption of glucose known to occur in sprue. Hanes and Reiser also found that the urinary excretion of phosphate after glucose ingestion is greater in sprue patients than in normals. The object of the work described below was to investigate the cell as well as the plasma changes in phosphate with both glucose and fructose; if the changes with fructose were to parallel those with glucose in normals, the relative changes after glucose and fructose ingestion in sprue patients could be used in comparing the absorption of glucose and fructose in sprue. This oblique method of approach is made necessary by the fact that blood-fructose curves after a fructose meal are an unsatisfactory measure of absorption, in that the increment in blood fructose even in normal people is of the order of only 10 mg. per 100 ml. and depends very largely on the efficiency of the liver in converting fructose to glucose rather than on the speed of absorption. These considerations make it difficult to accept the claim of Maegraith *et al.* (1945), based on blood-fructose curves, that fructose absorption is normal in sprue.

Method of Investigation

Five normals and four sprue patients were studied. All the patients had steatorrhoea and had recently lost weight, but none of them had watery diarrhoea. In each subject observations were made after the ingestion of glucose (50 g.) and of fructose (50 g.) respectively. Specimens of blood were taken into oxalate tubes, one before the meal and four at half-hourly intervals for two hours after the meal. Trichloracetic acid filtrates of the whole blood were made immediately, and for observations on the plasma the oxalated blood was centrifuged without delay. The estimations were done together at the end of the two-hour period. The following data were obtained for each experiment: (1) Plasma inorganic phosphate and (2) whole-blood inorganic phosphate, using the Bodansky (1933) method; (3) fasting and hourly urinary excretion of inorganic phosphate up to two hours, using the Briggs (1922) method; and (4) the packed cell volume. In addition data were obtained in three of the sprue patients and three of the normals on the "ester" phosphate changes, using Briggs's method.

Fasting blood values were usually determined from the mean of duplicate observations. The estimated error of a single determination was 2% for the inorganic phosphate, using a visual colorimeter, and 1% for the "ester" phosphate, using a Klett-Summerson photoelectric colorimeter. The inorganic phosphate content per 100 ml. of red cells was calculated from the figures for the plasma and whole



Graphs showing results of colorimetric estimations of (A) glucose and (B) phosphorus in the blood of a normal subject (N5) after oral administration of 50 g. of glucose.

blood and the haematocrit reading. The whole-blood "ester" phosphate content was calculated as the difference between the whole-blood acid-soluble phosphate and the inorganic phosphate content. Each curve consisted of one fasting value and four half-hourly observations after the meal. To compare the changes in the different curves we used the *mean decrement* (M.D.) of each curve defined as the difference in mg. per 100 ml. between the fasting value and the mean of the lowest three consecutive values after the meal. When the mean value rises above the fasting level the mean decrement is negative.

Fasting Values

The fasting values from the curves were analysed together with additional data obtained in another investigation. The mean values for inorganic phosphate in plasma, cells, and whole blood in normals and sprue patients are shown in Table I. The inorganic phosphate

TABLE I.—*Fasting Inorganic Phosphate Content of Plasma, Cells, and Whole Blood in Sprue Patients and Normal Subjects*

(Mean values, mg. per 100 ml.)

	Plasma	Cell	Whole Blood
Normals	3·74 ± 0·59	2·85 ± 0·44	3·31 ± 0·34
Sprue patients ..	3·36 ± 0·65	3·17 ± 0·50	3·20 ± 0·47

The means for plasma and cell values are derived from 5 normals and 5 sprue patients, those for the whole-blood values from 8 normals and 10 sprue patients. Determinations were made on each subject twice, on different days.

level is normally higher in the plasma than in the cells, and this difference is found in the present small series. On the other hand, no significant difference was found between the plasma and the cell levels in the sprue patients. Comparing the sprue values with the normals, the whole-blood levels are virtually the same; the mean plasma level is

lower, and the cell level higher, than the corresponding mean normal levels, but these differences are not significant.

Fasting "ester" phosphate values were determined in altogether 12 cases of sprue and 7 normals. None of the patients had diarrhoea. They were often anaemic; their mean haematocrit value was 41.1% (range 27–49%). Since about 98% of the blood "ester" phosphate is in the cells, for comparing the fasting "ester" phosphate values in sprue patients and normals they are given in terms of the cell content:

Mean Cell "Ester" Phosphate Content (mg./per 100 ml.)

Normal	47·56 ± 5·27%
Sprue	53·25 ± 5·63%
Difference of means	5·69 ± 2·74%

(P* less than 0·05 by "t" test)

The average red-cell content of "ester" phosphate was significantly raised in the sprue patients. This finding may be due to the inclusion of cases with anaemia, for in anaemia the red-cell "ester" phosphate is often high (Guest and Rapoport, 1941). The whole-blood "ester" phosphate values did not differ significantly in the sprue patients and the normals.

Changes after Ingestion of Glucose and Fructose

1. Inorganic Phosphate Changes in the Blood

The changes in the whole-blood, plasma, and cell phosphate after the ingestion of the two sugars are shown in Table II.

cell–plasma inorganic phosphate distribution after taking the sugar than in the fasting state.

In one of the normals, N5, simultaneous observations were made on the inorganic phosphate changes in the venous and capillary blood during the absorption of glucose, to see whether the arteriovenous difference in glucose normally observed during glucose absorption is associated with the disappearance of inorganic phosphate as the blood flows through the muscles. A photoelectric colorimeter was used for the estimations, which were carried out on 0.2 ml. of blood by means of the stannous chloride reduction method. The findings (see Graphs) suggest that at least part of the fall in inorganic phosphate occurs in the peripheral circulation and is related to the disappearance of glucose from the blood into the muscles.

Sprue Patients.—In the sprue patients most of the whole-blood inorganic phosphate curves did not differ significantly from the normals. One curve with glucose (S1) and two with fructose (S1 and S4) were definitely abnormal in that they showed a rise instead of a fall in inorganic phosphate. In patient S2 the changes were relatively slight with both glucose and fructose. The cell changes were variable. The plasma changes were consistent, and for both glucose and fructose differed significantly from those found in normals. With glucose there was a slight fall in the inorganic phosphate (average M.D. +0.087), while with fructose there was no change or a rise (average M.D. −0.137). In the case of the glucose curves S3 and S4 and the fructose curve S3 the slight fall or the rise in plasma inorganic phosphate corresponded to a relatively low fasting level and not to a significantly small whole-blood inorganic phosphate fall.

TABLE II.—*Plasma, Cell, and Whole-blood Inorganic Phosphate Mean Decrements (M.D.) in Normals and Sprue Patients after Glucose and Fructose Ingestion*

	After Glucose						After Fructose					
	Plasma		Cells		Whole Blood		Plasma		Cells		Whole Blood	
	F	M.D.	F	M.D.	F	M.D.	F	M.D.	F	M.D.	F	M.D.
Normals:												
N1	3·87	0·473	2·37	0·403	3·18	0·387	4·63	0·653	2·18	−0·350	3·43	0·143
N2	3·44	0·673	2·67	0·217	3·06	0·447	4·57	0·190	3·51	0·290	4·05	0·233
N3	3·02	0·037	3·61	0·573	3·29	0·269	2·99	−0·200	2·74	0·333	2·87	0·057
N4	3·58	0·190	2·83	0·310	3·23	0·243	3·37	0·290	2·96	0·167	3·18	0·187
N5	3·60	0·793	2·66	0·087	3·18	0·380	4·32	1·037	2·82	−0·107	3·64	0·532
Sprue patients:												
S1	4·1	0·067	2·5	−0·100	3·4	−0·033	4·09	−0·287	2·97	0·350	3·61	−0·147
S2	3·04	0·100	2·78	0·380	2·97	0·153	3·45	−0·257	3·37	0·883	3·43	0·090
S3	3·55	0·070	3·19	0·500	3·40	0·252	3·33	−0·003	3·83	0·563	3·54	0·217
S4	3·15	0·110	3·74	0·857	3·42	0·467	3·88	0	3·22	−0·007	3·53	−0·007
Mean of M.D.:												
Normals		0·443		0·283		0·345		0·394		0·067		0·230
Sprue patients		0·087		0·409		0·210		−0·137		0·447		0·041
Difference of means of M.D. (normal − sprue)		0·346		−0·126		0·135		0·531		−0·380		0·189
P		0·04		>0·1		>0·1		0·04		0·06		0·07

F = Fasting values. P = The probability that the given positive or negative values respectively could have arisen by chance.

Normals.—In normals there was a consistent fall in the whole-blood inorganic phosphate with both glucose and fructose. The fall was apparently greater with glucose than with fructose, but not significantly so. The cell and plasma changes were not simply related, and the cell change might be greater or smaller than the plasma change, or even in the opposite direction, so that the changes were much more variable in the plasma and cells than in the whole blood. The direction of the cell and plasma changes appeared to depend on the relative fasting cell and plasma values. Thus in the fructose curve on subject N1 the fasting cell inorganic phosphate content was very low compared with the plasma level, and rose after taking the sugar; subject N3 had in both curves a relatively high fasting cell inorganic phosphate content, and after taking the sugar the cell content fell markedly while the plasma content changed very little with the glucose and actually rose with the fructose. In general there was much less variability in the

From the changes shown in Table II one may conclude that after the ingestion of glucose and fructose the whole-blood inorganic phosphate normally falls. There was usually a corresponding fall in the cell and plasma levels, but when either of these levels was initially low in comparison with the other the corresponding inorganic phosphate fall was reduced or absent. In sprue, with fructose as well as with glucose, the fall in the whole-blood inorganic phosphate does not always happen. A consistently diminished fall in the plasma levels was observed, but this may in some cases have been due to the plasma inorganic phosphate content being initially low relative to the cell content.

2. "Ester" Phosphate Changes in the Blood

Two glucose and two fructose curves were done on normals, and three of each on sprue patients, to estimate any changes that may occur in the blood "ester" phosphate

*P = the probability that the difference could have arisen by chance.

levels (Table III). In the normals there was a slight but consistent fall, the M.D. being about 4–5% of the fasting value. Though more difficult to detect than the 10–15% fall which occurs in the whole-blood inorganic phosphate,

TABLE III.—*"Ester" Phosphate Changes after Glucose and Fructose in Normals and Sprue Patients (mg. per 100 ml. Blood)*

	After Glucose			After Fructose		
	Fasting	Mean Decrement	Cell Vol. (% of Whole Blood)	Fasting	Mean Decrement	Cell Vol. (% of Whole Blood)
Normals:						
N3 ..	18·9	0·30	46	—	—	—
N4 ..	22·4	0·93	47	21·7	0·77	47
N5 ..	—	—	—	21·5	1·83	45
Sprue patients:						
S2 ..	14·9*	−0·12*	26*	18·4	−0·50	27
S3 ..	20·8	1·53	41	18·0	1·57	42
S4 ..	22·0	0·40	46	20·4	0·10	46

* These estimations were not made at the same time as the corresponding inorganic phosphate estimations.

the absolute reduction in "ester" phosphate is greater than that in inorganic phosphate, so that the inorganic phosphate fall cannot be ascribed to a change into blood "ester" phosphate.

In three sprue patients the changes were variable from case to case but similar for the two sugars: a slight rise in "ester" phosphate occurred in one patient; in the other two there was a fall, slight in one, marked in the other. The changes parallel those in the corresponding inorganic phosphate curves for whole blood.

3. Changes in the Urinary Excretion of Phosphate

Phosphorus excretion in the urine is often diminished immediately after glucose absorption (Peters and Van Slyke, 1931), but this does not always occur (Reiser, 1940). Our own results on normals showed a diminished excretion of phosphate after the ingestion of both sugars (Table IV).

TABLE IV.—*Change in Excretion of Phosphate after Glucose and Fructose Ingestion (Mean Hourly Phosphate Excretion (mg./hr.) during Two Hours after Meal, as compared with the Fasting Excretion)*

	After Glucose	After Fructose
Normals:		
N1	−16·65	−15·7
N2	−10·0	— 5·4
N3	— 9·85	−11·1
N4	−15·8	— 1·2
N5	−12·7	— 8·7
Sprue patients:		
S1	— 8·9	+16·85
S2	+ 4·7	+ 1·45
S3	+ 8·6	+ 4·5
S4	+ 8·2	+13·4

The series is very much smaller than that of Bachmann *et al.* (1938), who in 25 normals found no significant change in urinary phosphate excretion after glucose and fructose. In our sprue patients there was an increased excretion of phosphate during the two hours after taking the glucose and fructose; even on the assumption that there is normally no change in excretion, the rise is significant for the fructose though not for the glucose figures.

Discussion

The results in normal subjects show that fructose ingestion is followed by blood-phosphate changes similar to those observed after taking glucose. Using the fall in the whole-blood inorganic phosphate as evidence that the sugars have been absorbed, it was found that two sprue patients had some impairment in the absorption of both glucose and fructose. Like glucose, fructose can form phosphate esters, and a defect in phosphorylation, which Stannus (1942) thinks may be present in sprue, would be expected to interfere with the absorption of both these sugars.

Summary

The plasma, cell, and whole-blood changes in inorganic phosphate after the ingestion of glucose and fructose were investigated in five normals and four patients with tropical sprue. Observations were also made on the changes in urinary phosphate excretion, and in some of the cases on the changes in the blood "ester" phosphate.

There is normally a fall in the whole-blood inorganic phosphate after the absorption of both glucose and fructose. It usually affects both plasma and blood cells, but may be limited to either. It is associated with a fall in the blood "ester" phosphate content and is partly due to a passage of phosphate into the tissues. The normal whole-blood inorganic phosphate changes after glucose and fructose were diminished or reversed in some sprue patients, indicating a defective absorption of both these sugars. The plasma inorganic phosphate fall was abnormally small; this may have been due partly to the initially low fasting plasma inorganic phosphate levels found in some of the patients. There was a rise in urinary phosphate excretion in the sprue patients, while normally there is either no change or a fall.

No difference could be demonstrated between the absorption of glucose and fructose in patients suffering from tropical sprue.

Thanks are due to the Director of Medical Services in India for permission to publish this work, which was carried out as part of the G.H.Q. (I.) Medical Research Organization investigation on sprue. I am grateful to Major D. A. K. Black, R.A.M.C., for much helpful advice and criticism, and to Pte P. Trinder, R.A.M.C., for his technical assistance.

REFERENCES

Bachmann, G., Haldi, J., Ensor, C., and Wynn, W. (1938). *Amer. J. Physiol.*, **124**, 77.
Bodansky, A. (1933). Quoted in Hawk, P. B., and Bergeim, O., *Practical Physiological Chemistry*, 1942, Churchill, London, p. 463.
Briggs, A. P. (1922). Quoted in Peters, J. P., and Van Slyke, D. D., *Quantitative Clinical Chemistry*, 1931, London, Baillière, Tindall and Cox, **2**, 879.
Guest, G. M., and Rapoport, S. (1941). *Physiol. Rev.*, **21**, 410.
Hanes, F. M., and Reiser, R. (1940). *Amer. J. med. Sci.*, **200**, 661.
Hartman, F. W., and Bolliger, A. (1925). *J. Amer. med. Ass.* **85**, 653.
Maegraith, B. G., Adams, A. R. D., Havard, R. E., King, J. D., and Millet, R. (1945). *Lancet*, **2**, 635.
Peters, J. P., and Van Slyke, D. D. (1931). *Quantitative Clinical Chemistry*, London, Baillière, Tindall and Cox, **1**, 1117.
Reiser, R. (1940). *J. biol. Chem.*, **135**, 303.
Stannus, H. S. (1942). *Trans. roy. Soc. trop. Med. Hyg.*, **36**, 123.

At the tenth anniversary celebrations of the Empire Rheumatism Council not long ago Sir Wilson Jameson, who was deputizing for the Minister of Health, said—in appreciation rather than in complaint—that the Council had been "sometimes a thorn in the side of the Ministry." In the annual report of the Council, now published, Lord Horder, the chairman, says that this tribute to its "nuisance value" is accepted with gratitude. The position at the date of the foundation of the Council was that only about 10% of underprivileged rheumatic sufferers had hope of effective treatment, though such treatment could have saved the majority of them from crippling disability. The Council stressed the fact that it was quite unreasonable to await the full success of research before instituting measures for dealing with treatment, and it put forward a plan for national action, a challenge which has been met with the right answer.

Writing of the new National Health Service, Lord Horder says that much has yet to be settled before the Council can definitely plan its course so as to help in every way possible; but it is known that the system suggested by the Council will be followed in principle—namely, the provision of special treatment centres in each region, with peripheral local centres linked to them. These special centres will normally be sited in association with university medical teaching schools. On the recommendation of its Scientific Advisory Committee the Council has appointed two whole-time registrars whose duty it will be to estimate the factors concerned in the causation of rheumatoid arthritis.

H. INFLUENZAE MENINGITIS IN RELATION TO TREATMENT

A CLINICAL STUDY OF FOUR CASES

BY

J. THOMSON, F.R.C.P.Ed.
Physician in Charge, Children's Department, Royal Infirmary, Dundee

LAETITIA M. BRUCE, M.B., Ch.B.
House Physician, Royal Infirmary, Dundee

AND

M. G. GREEN, M.B., Ch.B.
Postgraduate Assistant

The increase in recovery rate of *H. influenzae* meningitis in recent years, due to chemotherapeutic and antibiotic therapy, has led to a greater interest in the condition. *H. influenza* type b rabbit serum has also been used with success in America (Alexander, 1943, 1944), but supplies so far have not been available in this country for an adequate test.

It would seem that *H. influenzae* meningitis is by no means a rarity. Out of the 29 cases of meningitis of all types admitted to this department between May 1, 1946, and Feb. 1, 1947, four were of the *H. influenzae* group, including one of mixed flora; and McIntosh and Drysdale (1945), working in the same area, have reported a further two cases. In view of the not infrequent occurrence of the condition it is important that early diagnosis be made and adequate therapy instituted.

It has been our more recent practice here to suspect *H. influenzae* meningitis in all cases in which, on initial lumbar puncture and direct smear examination, other organisms could not be implicated, and to begin treatment as for *H. influenzae* meningitis. The advent of pure (i.e., white) penicillin in economic supply has diminished the undesirability of large doses of intrathecal penicillin by reducing the incidence and severity of reactions. Prior to this we used a Seitz-filtered watery solution of the yellow sodium salt, which, when given in large doses intrathecally, produced severe cerebral reactions. Penicillin-sensitivity tests and cerebrospinal fluid penicillin concentrations were obtained in all our cases except Case 2, but we found that they bore little relation to the clinical response. Possibly more recent methods of estimation will show greater clinical correlation and be of more value in estimating the therapeutic needs.

Three of four cases treated here have made complete recoveries, the fourth patient dying of intercurrent measles, with bronchopneumonia as a further complication. While it is realized that the series is too small for generalization, when taken in conjunction with the recently published series by Zinnemann (1946) a fairly reliable method of treatment may be formulated, together with suggestions for variation to meet resistance to routine treatment.

Case 1

M. R., aged 11 months, was admitted on May 19, 1946, following pneumonia three weeks previously. The complaints were drowsiness, irritability, slight vomiting, and squint. Examination showed slightly raised temperature, slight neck rigidity, and a left otitis media. Lumbar puncture produced a turbid fluid which on culture yielded *H. influenzae*, sensitive to penicillin and slightly sensitive to sulphamezathine, sulphathiazole, and sulphadiazine.

Treatment.—(1) Sulphamezathine, 4.5 g. on the first day and 3 g. daily thereafter for 8 days. Total, 28.5 g. (2) Intrathecal penicillin. Administration was very irregular. So far as was possible lumbar puncture was alternated with cisternal puncture. For the first 5 days 30,000 units were given daily, then stopped for 4 days; there followed 30,000 units for 2 days,

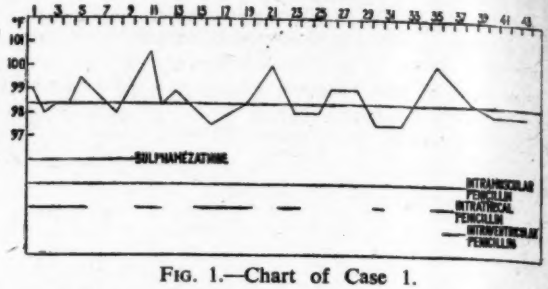


FIG. 1.—Chart of Case 1.

stopped for 3 days; 50,000 units for 5 days, stopped for 2 days; 50,000 units for 2 days, stopped for 6 days; 50,000 units for 1 day, stopped for 4 days, and finally 25,000 units for 2 days. Total, 660,000 units. (3) Intramuscular penicillin averaged 90,000 units daily in doses of 15,000 units four-hourly. Total, 3,330,000 units.

The temperature had fallen by the seventh day after admission, but never really settled. The cerebrospinal fluid, which had been clear on the second day, became turbid again on the 15th day, though cultures were sterile from the 13th day. On the 20th day the temperature rose, and continued to swing intermittently in spite of treatment till the 38th day. It had by then become apparent that there was resistance to treatment, possibly by a blockage in the cerebrospinal fluid circulation cutting off penicillin from a nidus of infection. With a view to overcoming this, ventricular punctures were performed through the anterior fontanelle on the 36th and 37th days. Blood-stained fluid was obtained, and 25,000 units of penicillin were injected into a lateral ventricle on each occasion. Subsequent to this the temperature settled satisfactorily, and the child was discharged on the 62nd day fully recovered, and has remained well since. The patient's clinical condition had closely followed the rise and fall of temperature.

Case 2

J. F., aged 10 weeks, was admitted on June 10, 1946, with a history of being off colour for one day, with some vomiting. Examination showed a flushed, sweating child with some respiratory distress. Slight neck rigidity was present. Lumbar puncture produced a blood-stained fluid which on culture yielded: (*a*) *Staph. aureus*; (*b*) *Str. viridans* or possibly pneumococcus; (*c*) *Str. anhaemolyticus*; (*d*) *H. influenzae* (this was not typed). These organisms were all sensitive in some degree to sulphathiazole and to a less extent to sulphamezathine. No growth was obtained in the subsequent culture. Sensitivity to penicillin was not investigated. Brain abscess or middle-ear disease was suspected, but no evidence of either was discovered then or later.

Treatment.—(1) Intrathecal penicillin, 25,000 units, was given daily for 9 days. Total, 225,000 units. (2) Sulphamezathine, 4.5 g. on the first day and 3 g. thereafter. On receipt of the sensitivity results on the fourth day sulphathiazole was substituted in 3 g. doses daily until the 12th day from admission. Total, 37.5 g. (3) Intramuscular penicillin, 10,000 units four-hourly for 13 days. Total, 780,000 units.

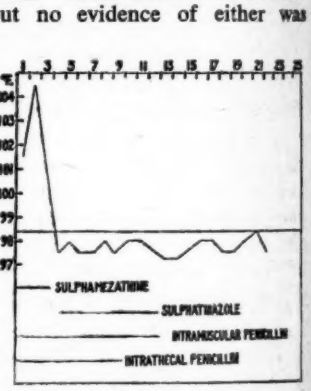


FIG. 2.—Chart of Case 2.

The cerebrospinal fluid was sterile on the eighth day. The temperature fell on the third day and remained settled till discharge on the 22nd day. After discharge there was some suspicion of hydrocephalus, but this proved unfounded. The child has continued well since.

Case 3

J. B., aged 7 months, was admitted on Aug. 22, 1946, with four days' history of vomiting and restlessness. Examination showed neck rigidity and a bulging fontanelle. Lumbar puncture produced a turbid fluid which yielded *H. influenzae* on culture. The strain isolated was of the smooth capsulated variety, but did not agglutinate with the six known antisera for types a to f. The classification of this strain is still under investigation.* The organism was slightly sensitive to penicillin and sulphathiazole.

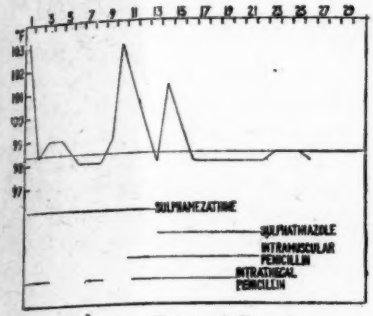


FIG. 3.—Chart of Case 3.

Treatment. — (1) Intrathecal penicillin, 25,000 units for 2 days, stopped for 4 days; 25,000 units for 1 day, stopped for 3 days; 45,000 units daily for 9 days. Lumbar puncture and cisternal puncture were alternated so far as was possible. Total, 480,000 units. (2) Intramuscular penicillin, 90,000 units, was given daily in doses of 15,000 units from the 11th to the 21st day of admission. Total, 990,000 units. (3) Sulphamezathine, 7 g. on the first day, and 3 g. daily till the 12th day, when the sensitivity results were obtained, and sulphathiazole, 3 g. daily, was substituted till the 21st day. Totals: sulphamezathine, 40 g.; sulphathiazole, 27 g.

The temperature settled and the fluid became clear on the sixth day, when culture was sterile. On the 10th day a relapse occurred, the fluid becoming turbid and the temperature rising. *H. influenzae* was again cultured from the cerebrospinal fluid. On the 16th day the temperature settled, the fluid became clear and sterile, and the child made an uninterrupted recovery. She has remained well since.

During treatment severe reactions followed many of the intrathecal penicillin injections of 45,000 and 50,000 units. These consisted of twitchings of the limbs and body, sometimes tremors, turning up of the eyes, and an embarrassed respiration leading occasionally to cyanosis. These occurred one to four hours after injection, and lasted up to three hours. Chloral hydrate partially controlled them, and it became a routine practice to give large doses prior to puncture, which had the effect of lessening the reactions. The cause of these delayed reactions is obscure.

Case 4

J. L., aged 13 months, was admitted on Jan. 20, 1946, with a two-day history of drowsiness, irritability, and slight neck stiffness. Examination revealed neck rigidity and Kernig's sign. Lumbar puncture produced a turbid fluid giving *H. influenzae* type b on culture. This was relatively resistant to all sulphonamides and slightly sensitive to penicillin.

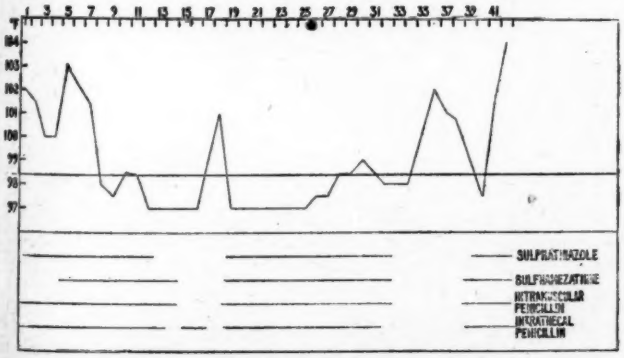


FIG. 4.—Chart of Case 4.

Treatment.—(1) Intrathecal penicillin, 50,000 units daily by alternate cisternal and lumbar puncture. Pure penicillin was used in this case, and it was found that the reactions were less frequent and less severe. For 13 days 50,000 units were administered daily, then stopped for 2 days; 50,000 units for 1 day, stopped for 2 days; 50,000 units for a further 13 days, stopped for 8 days, and finally administered for 4 days. Total, 1,550,000 units. (2) Intramuscular penicillin, 125,000 units daily. This was given as an oil–wax suspension in one dose daily for 5 days. Total, 750,000 units. (3) Sulphathiazole, 4.5 g. daily, given in three-hourly doses by mouth for 11 days. Total, 49.5 g.; also from the 19th to 32nd day. Total, 63 g.; and from the 40th to the 42nd day. Total, 13.5 g. Combined total, 126 g.

The temperature remained raised, and on the fifth day the oil–wax suspension of penicillin was replaced by an aqueous solution, 20,000 units four-hourly for 9 days. Total, 1,080,000 units. From the 19th to 32nd day 1,680,000 units of penicillin in aqueous solution were given, and from the 39th to 42nd day 480,000 units—a combined total of 3,240,000 units of aqueous solution of penicillin.

Sulphamezathine 0.5 g., total 27 g., was given every four hours for 9 days in addition to the sulphathiazole, on the principle expounded by Frisk *et al.* (1947). Sulphamezathine, 0.5 g. four-hourly, was also given from the 19th to 32nd day (total, 42 g.) and from the 39th to 42nd day (total, 12 g.), making a combined total of 81 g.

The temperature promptly fell and was normal on the eighth day, and the spinal fluid became clear and sterile. Intrathecal penicillin was stopped on the 13th day and the rest of the treatment on the 14th day. On the 17th day the temperature rose, the cerebrospinal fluid became turbid and produced *H. influenzae* type b on culture. Treatment was recommenced as before. On the 20th day the symptoms subsided, and two days later the fluid was sterile. On the 30th day the temperature rose to 99° F. (37.2° C.). No meningitic symptoms appeared; the cerebrospinal fluid was clear and on culture was sterile. Measles was suspected. In case this was another relapse, 50,000 units of penicillin and 6 ml. of air were administered. The temperature subsided on the 32nd day and all treatment was stopped.

On the 36th day the temperature was 102° F. (38.9° C.) with no symptoms of meningitis, and the chest was normal. Measles was again suspected; and on the 38th day a morbilliform rash appeared on the body. Photophobia was present, but no Koplik's spots were seen. Measles was diagnosed. No serum to account for a serum rash had been given. Next day (39th) meningitic symptoms were again evident, and lumbar puncture proved the occurrence of another relapse. The cerebrospinal fluid was very thick and the needle was practically blocked. At this point the technique of washing out the spinal canal was adopted together with injection into the canal of heparin and air (Alexander, 1944). The procedure was as follows: Three ml. of normal saline was injected by cisternal route and drained by lumbar route. This was repeated several times until about 30 ml. of cerebrospinal fluid in addition to the saline had been drained away. This allowed as much purulent cerebrospinal fluid to be removed in as short a space of time as possible, and prevented pockets of purulent material forming in the canal. Nikethamide, 1 ml., was given intramuscularly before and after; 0.2 ml. heparin (10 mg., or 1,000 Toronto units) and 10 ml. air (i.e., one-third the quantity of cerebrospinal fluid removed) were then injected. The object of this was to separate existing adhesions and prevent further adhesions forming, also to allow better diffusion of the penicillin, 50,000 units of which was injected intrathecally at the same time. Intramuscular penicillin, 20,000 units in aqueous solution, was then given four-hourly, and sulphamezathine therapy was started again.

On the 40th day, cisternal puncture being unsuccessful, normal saline was injected and withdrawn by lumbar puncture after preliminary withdrawal of cerebrospinal fluid. Ten ml. of saline was used each time—a total of 60 ml. The fluid was purulent at first, but merely turbid at the end of the irrigation. 50,000 units of penicillin, 0.2 ml. of heparin, and 2 ml. of air were given intrathecally.

*As we go to press we are informed by Drs. M. Pittman and K. Zinnemann that this organism is of type a (A).

Unfortunately, the child developed bronchopneumonia on the 39th day. Sulphathiazole was administered as well as sulphamezathine. Since the 38th day the child had been listless, with distressed respiration, and the chief difficulty encountered was that of keeping respiration going after lumbar or cisternal puncture. He collapsed several times, and it became increasingly difficult to resuscitate him.

On the 42nd day his condition appeared to improve and the cerebrospinal fluid was only slightly purulent, but the bronchopneumonia persisted and the child died.

Extract from Post-mortem Report (Dr. J. H. Prain).—"Intense purulent meningitis with greenish muco-gelatinous exudate, covering mainly the base of the brain, but with spread to lateral and superior surfaces. Similar material extends down the spinal column surrounding the cord for the whole length of the canal. There was no evidence of developing hydrocephalus."

Discussion

Zinnemann (1946) emphasizes the need for continuing treatment until culture of the C.S.F. has been sterile for seven days. This has been our experience. In all our cases, except Case 2 when treatment was continued until the temperature had remained normal for six days, relapse occurred owing to insufficient treatment. The relationship between temperature and C.S.F. sterility is not definitely apparent, the culture frequently becoming sterile before the fall in temperature. In view of the delay in obtaining culture reports under many circumstances, we feel that treatment may safely be related to the temperature chart and will be adequate if intrathecal penicillin is continued until the temperature has been normal for seven days.

A high dosage of intrathecal penicillin was found necessary, 50,000 units daily being satisfactory, preferably preceded by chloral hydrate. We prefer the single injection daily, as the cumulative trauma of repeated lumbar puncture is considerable, and with pure penicillin the reaction risk is decreased. We further attempted to decrease the trauma by alternating lumbar and cisternal puncture.

It is important to ascertain the sensitivity of the infecting organism to various sulphonamides, as this appears to vary. A new chemotherapeutic principle, involving the use of two or more sulphonamides simultaneously, expounded by Frisk *et al.* (1947), has opened the way to increased doses of sulphonamides without unduly increasing the risk, and is worthy of a trial in resistant cases.

In the majority of conditions requiring intramuscular penicillin we have found the oil–wax suspension satisfactory. However, in a listless child absorption may well be delayed, and four-hourly injections of a watery solution until the child becomes more mobile probably give a better absorption rate.

In Cases 1 and 4 there was some apparent hold-up of penicillin circulation in the C.S.F. To overcome this, the method of injecting air and heparin intrathecally was adopted in Case 4. In cases where the fontanelle is still patent, ventricular puncture seemed a practical and possibly more certain alternative, and this was tried with apparent success in Case 1. One of us (J. T.) has had a resistant case of pneumococcal meningitis that responded to ventricular injection of penicillin. Case 4 appeared to be doing well until a febrile period of several days followed by morbilliform rash and photophobia developed. This was almost certainly measles, as cases had occurred in the ward. After this pneumonia developed, and the child died in spite of improving cerebrospinal fluid.

Conclusion

H. influenzae meningitis must be treated early and adequately to ensure maximum success in treatment. 50,000 units of pure penicillin should be given intrathecally daily, preceded by chloral hydrate by mouth or intramuscularly, until the temperature has remained normal for seven days. Full doses of a sulphonamide, the choice depending on sensitivity tests, should be given also in conjunction with intrathecal penicillin. The initial sulphonamide doses should be given intramuscularly. Until sensitivity has been ascertained, sulphamezathine, sulphadiazine, or sulphathiazole, or two of them together, should be given. Intramuscular penicillin is also given, starting with the watery solution four-hourly, and as recovery occurs replacing it with the oil–wax suspension.

It is of the utmost importance to persist with intrathecal injections of penicillin until the temperature has been normal for at least seven days, despite apparently normal cerebrospinal fluid in the interval.

Resistance to treatment can be met by using more than one sulphonamide, each in full dose, and if practicable by ventricular injections of penicillin.

American reports of type b rabbit serum are encouraging. It would appear to be of value only, however, in cases caused by *H. influenzae* type b.

Summary

Four cases of *H. influenzae* meningitis are described. In the period reviewed the incidence of *H. influenzae* meningitis was 13.8% of all meningitis in this department.

The importance of treating all unclassified cases of purulent meningitis fully and promptly with intrathecal and intramuscular penicillin and sulphonamides is discussed.

The use of two sulphonamides, each in full dose simultaneously, was adopted, and is considered to have been helpful.

Treatment should be continued for seven days after the temperature has become normal. The return of normal cerebrospinal fluid is definitely not an indication for ceasing treatment at once.

As cultures of cerebrospinal fluid may be sterile before the temperature becomes normal, the temperature is at least as important as the culture findings in deciding when to cease treatment.

The value of intraventricular injections of penicillin in resistant cases is mentioned, also experience in using intrathecal wash-outs and the use of intrathecal air and heparin injections.

Cerebral reactions following intrathecal injections of 50,000 units of penicillin are described. Their varying severity and unpredictable time of onset are mentioned.

Dilution of the penicillin with 10 ml. of cerebrospinal fluid at the time of injection did not prevent these reactions; but chloral hydrate was useful in diminishing them.

Acknowledgment is due to Dr. Jean G. Bryson, who was associated with Cases 1 and 2; to Dr. May I. Milne, who was associated with Case 4; to Sisters Meekison and Crichton, for their interest and help; to Prof. Tulloch and his staff, for their patience with our many demands on their time; and to Dr. K. Zinnemann for additional information regarding typing of *H. influenzae* strains.

REFERENCES

Alexander, H. E. (1943). *Amer. J. Dis. Child.*, **66**, 160, 172.
—— (1944). *J. Pediat.*, **25**, 517.
Frisk, A. R., Hagerman, G., Helander, S., and Sjögren, B. (1947). *British Medical Journal*, **1**, 7.
McIntosh, D. G., and Drysdale, Constance F. (1945). Ibid., **2**, 796.
Zinnemann, K. (1946). Ibid., **2**, 931.

Speaking on the role of voluntary workers in the National Health Service, Mr. John Edwards, Parliamentary Secretary to the Ministry of Health, told hospital nurses and contributors at the Royal Buckinghamshire Hospital, Aylesbury, recently that it was vital that the supply of voluntary work should be kept alive. There was an unlimited amount of work to be done in improving the hospitals; only a small proportion of this could be achieved solely by voluntary effort, but with the help of the Chancellor of the Exchequer the apparently impracticable vision of those who had the hospitals at heart could be made a reality.

BALANTIDIAL DYSENTERY IN RODRIGUEZ AND ITS TREATMENT WITH MERCURY BINIODIDE

BY

M. SHUN-SHIN, M.B., B.S., D.T.M.&H.

Manson-Bahr (1936) states: "Balantidial dysentery is such a rare disease in man that it is more of a curiosity than anything else. Unfortunately the treatment of this infection has so far proved to be very unsatisfactory." The following cases successfully treated with mercury biniodide may therefore prove of interest.

Rodriguez is an island of 40 sq. miles lying about 350 miles from Mauritius, of which it is a dependency. It has a population of 12,000, and every household breeds at least one pig. The prevailing hygienic conditions are very unsatisfactory, so that dysentery due to *Balantidium coli* should not be unexpected.

During 1945 ten cases of balantidial dysentery were recorded; the first case was fatal, but the others were cured. When mepacrine proved to be ineffective in the first case it was decided to use some heavy metal, as Walker (quoted by Manson-Bahr, 1931) found that organic compounds of silver were very effective. Mercury biniodide was tried because it was the most easily obtainable metallic compound.

Case Histories

Case 1.—A man aged 30 was admitted into hospital on April 20, 1945, having complained of "dysentery" for several days. His stools were profuse and watery, and contained *Bal. coli* in fairly large numbers. He was given mepacrine 0.5 g. thrice daily and a mixture of bismuth and opium. The diarrhoea increased in severity and he died five days later.

Case 2.—A boy aged 4½ years was admitted into hospital on May 27, 1945, with the history of having had an attack of diarrhoea two months previously but without blood; it lasted for ten days and passed off with medical treatment. For some days before admission he had been having seven to nine motions daily; most of the stools contained blood, but sometimes only mucus. On admission the stool was found to contain *Bal. coli*. An injection of biniodide of mercury, 1/24 gr. (2.7 mg.), was given intramuscularly. The number of stools decreased progressively until only two motions containing some blood were passed on the 29th, when another injection was given. By June 6 all blood had disappeared from the faeces, which were found to contain no *Bal. coli*, but only trichuris and ascaris eggs. The boy was seen again at the beginning of April, 1946. He was then well and passing normal stools, but these were not brought for examination.

Case 3.—A girl aged 3 years attended the out-patients' department on May 31, 1945. The mother stated that the child had been ailing for three weeks and had been passing seven to eight stools daily, with blood. The stools were found to contain *Bal. coli* apart from ascaris eggs. Biniodide of mercury, 1/24 gr., was administered intramuscularly the same day. On the next three days the child passed only one stool each day. A second injection was given on the 5th, and a stool examination on the 8th revealed only the presence of ascaris eggs: there were no *Bal. coli*. The child had been feeling well for the last three days and had a good appetite. She was seen again in April, 1946, when she was in good health, but her stools were not brought for examination.

Case 4.—A boy aged 5 years was seen on June 18, 1945. For the last two days he had been passing two to four motions daily, with blood and mucus. *Bal. coli* was found in his stools, and 1/10 gr. (6.5 mg.) of biniodide of mercury was immediately given intramuscularly. After that the blood and mucus disappeared from the stools, which became watery. On the 20th, stool examination revealed an absence of *Bal. coli* and the presence only of ascaris eggs and a few Charcot-Leyden crystals. A second injection was given. Two days later the patient was passing one solid motion daily without *Bal. coli* or Charcot-Leyden crystals. The boy remained well until March 4, 1946, when he attended the out-patients' department with the history that for the last two weeks he had been passing six to seven loose motions daily. The stools were found again to contain *Bal. coli* and ascaris eggs. Biniodide of mercury was prescribed for alternate days, and four injections were given. He was again seen on April 5, when no *Bal. coli* was detected. The mother volunteered the statement that the child was well after three injections.

Case 5.—A girl aged 7 years had for several months been passing blood and mucus occasionally, but only one or two motions daily. Though she had been feeling weak, her appetite had been good. When seen on Aug. 9, 1945, her stool was found to contain ascaris eggs and *Bal. coli*. On the 11th and 14th she was given 1/18 gr. (3.6 mg.) of biniodide of mercury intramuscularly. On Aug. 21 the stools were found to harbour only ascaris eggs. Seven months later the girl was still keeping well, and no *Bal. coli* was found in her motions.

Case 6.—Three months before coming to hospital a girl aged 10 had had diarrhoea, which lasted two days. She was given chenopodium oil, after which the diarrhoea ceased. For four days before her admission on Oct. 1, 1945, she was passing two or three motions daily, with blood and mucus, and was having colicky pains. On admission her stools were found to contain *Bal. coli*, ascaris eggs, and Charcot-Leyden crystals. She was at once given 1/12 gr. (5.4 mg.) of biniodide of mercury. Next day the *Bal. coli* had greatly increased in number and were very motile. On the 3rd another injection of biniodide was given, and by Oct. 5 all the *Bal. coli* had disappeared from the faeces. She remained well until six months later, when she again attended the out-patient department. She was then (April 2, 1946) passing two loose motions with blood daily and again *Bal. coli* was detected. Biniodide of mercury, 1/12 gr., was then given every other day. After five injections the patient was still passing two loose motions daily, but the blood had disappeared. The faeces, however, were found still to contain *Bal. coli* in very large numbers. The protozoa were so numerous and close together that some fields looked like mosaic work. As ascaris eggs were also numerous, chenopodium oil was given on April 13. The patient passed about one hundred roundworms. Next day, after a soft-soap enema, she was given an enema of mercury biniodide, 1/6 gr. (11 mg.), in one litre of water—equivalent to a concentration of 1 in 100,000. On April 16 both ascaris eggs and *Bal. coli* were absent from the stools.

Case 7.—A boy aged 4 years had been ill for three days and had been passing one motion almost every hour. The stools were very watery and he vomited occasionally. On March 9, 1946, the stools were found to contain ascaris eggs and *Bal. coli* in faily large numbers. Mercury biniodide, 1/12 gr. (5.4 mg.), was prescribed. He was seen again on April 3 after he had received four injections. The stools were then loose, but numbered only three a day, and contained ascaris eggs but no *Bal. coli*. The child was feeling well otherwise.

Case 8.—A girl aged 13, sister of Case 6, had been ill for four days. She had been passing four to six stools daily with blood and mucus and tenesmus. When the stool was examined on March 14, 1946, *Bal. coli* was discovered. Mercury biniodide, 1/12 gr., was injected every other day. After two injections all the symptoms disappeared, but the stools were still loose. By April 12 she had had 11 injections; the stool was by this time normal and well formed, and there was only one daily. No *Bal. coli* was seen.

Case 9.—A man aged 40 had been ill for six days. For the first two days there were only two or three stools daily, watery but without blood. For the last four days blood and mucus had appeared in the stools, which numbered up to 12 daily. Motions were accompanied by severe tenesmus. When he attended the out-patients' department on March 27, 1946, *Bal. coli* was detected in his stools. Next day 1/6 gr. (11 mg.) of mercury biniodide was injected. On the 29th only eight stools were passed; they were less in volume and the tenesmus had

decreased in severity. On the 30th a second injection was given, three days after which only two stools were passed, and these were quite normal. No *Bal. coli* was detected in the stools when examined on April 13.

Case 10.—A man aged 63 had had dysenteric symptoms on and off for the past six months. For the last few days he had been passing thick liquid blood-tinged stools which were found to contain *Bal. coli*. A first injection of 1/2 gr. (32 mg.) of mercury biniodide was given on April 11, 1946. Two days later *Bal. coli* was still present and a second injection was given. On April 16 no *Bal. coli* was found in the stools and the patient was feeling very well.

In-vitro Tests.—A 1 in 100,000 solution of biniodide of mercury was found to kill the protozoa instantaneously. Motions ceased immediately, but ciliary movements continued for about ten minutes. The granules in the protoplasm were seen to move in a caudal direction as in a current. After ten minutes over 95% of the protozoa were found to be dead and to have burst. In 1 in 1,000,000 mercury biniodide solution, motion of the protozoa took 15 minutes to stop, and after one hour most of the protozoa were dead. With mercury perchloride a concentration of 1 in 100.000 was required to obtain the same effect as with 1 in 1,000,000 solution of mercury biniodide, while with tartar emetic a concentration of 1 in 2,000 was required. With a 1% solution of methylene blue the protozoa took over an hour to die.

Characteristics of Stools.—In early cases the stools were indistinguishable to the naked eye from those of amoebic dysentery. In more advanced cases the stools assumed a very characteristic watery form ; in two cases it was possible to guess the presence of *Bal. coli*. In two cases Charcot-Leyden crystals were discovered, being very large and fairly numerous in one case. In spite of repeated and careful examinations no *Entamoeba histolytica* were found. The crystals disappeared at the same time as the *Bal. coli*.

Discussion

The only literature at our disposal consists of the *Lancet* and the *British Medical Journal* for the last ten years and a few pre-war numbers of *La Presse Médicale*. Mackenzie and Bean (1938) state that Dobell and O'Connor, after a survey of the literature, could find no record of a specific cure for the disease, but that Cort claimed success with enemata of 15 ml. of oil and chenopodium in 150 ml. of olive oil, and Banik reported a case successfully treated with yatren enemata, 8 oz. (227 ml.) of 2.5% solution. Mackenzie and Bean themselves used Loeffler's methylene blue. The lower bowel was thoroughly washed out and two pints (1.14 litres) of methylene blue was slowly run in. This was retained for 2½ hours and was followed by another wash-out, the whole procedure being repeated next day. A fortnight later a further wash-out was given, followed by an injection of the dye. Since that time neither ciliates nor cysts have been found. Remlinger, Cabanie, and Bailly (1938) attended a case of *Bilharzia haematobia* and *Bal. coli* infection in an Arab boy aged 14. The bilharzia infection was treated with subcutaneous injections of 0.5 ml. of "anthiomaline" (antimony thiomalate of lithium). After 16 days' treatment only bilharzia was present.

The pathology of balantidial dysentery resembles very much that of amoebic dysentery. In both types the protozoa are not only present on the surface of the bowel but congregate in the follicles and are embedded in the tissues forming the base of the ulcers. As is the case with the treatment of amoebic dysentery by parenteral administration of emetine, the drug used in the treatment of balantidial dysentery should be introduced parenterally so that it can reach the parasite via the blood stream. Mackenzie and Bean's case, and that of Banik, successfully treated with enemata alone, possibly were early cases, before the parasite had been able to burrow deeply into the intestinal mucosa. In advanced cases it is doubtful if with an enema the drug will be able to reach the parasite.

In the nine cases successfully treated by us with intramuscular injections of biniodide of mercury improvement set in after the very first injection, and the second injection completely cleared the infection together with the symptoms in most of the cases. In Case 5 no *Bal. coli* was detectable seven months after treatment. I have no doubt that Cases 2 and 3 would, at the time of writing (after 11 months), have shown no parasite if the patients had sent their stools for examination. Case 4 had another attack of the infection after 10 months, and Case 6 after 6 months. These two children belong to very low classes of society, living under unsatisfactory sanitary conditions, and I believe theirs are cases of reinfection rather than of relapse, as they are still exposed to the infection.

Case 6 developed the illness a second time, and five injections of the drug did not clear the infection though the symptoms disappeared. I was inclined to think that in this case the infective organism was leading a saprophytic life in the lumen of the bowel, which explains why an enema was so successful where parenteral administration of the drug had failed.

In-vitro tests have shown that mercury biniodide is very lethal to the parasite: it is ten times more lethal than mercury perchloride, 500 times more than tartar emetic, and 100,000 times more than methylene blue.

Enemata with 1 in 100,000 solution of biniodide, one litre in quantity, should be quite harmless to the human body, because even if the whole of the mercury compound should be absorbed it would amount to only 1/6 gr., which is within the therapeutic dose.

Summary

Ten cases of balantidial dysentery are described. The first case treated with mepacrine ended fatally.

The nine other cases, treated by intramuscular injections of biniodide of mercury, were cured, but one of them required in addition an enema of the biniodide.

It is suggested that intramuscular injection be used except when the protozoa are living also in the lumen, when injections combined with enemata are probably best.

This article is published with the kind permission of the Director of Health Department, Mauritius.

REFERENCES

Mackenzie, D. L., and Bean, H. (1938). *Lancet*, **1**, 84.
Manson-Bahr, P. (1931). *Manson's Tropical Diseases*, 9th ed., p. 436.
—— (1936). Lettsomian Lectures, *Lancet*, **1**, 759.
Remlinger, P., Cabanie, G., and Bailly, J. (1938). *Presse méd.*, **46**, 1730.

Dr. Winifred De Kok's *First Baby* (Pp. 130, illustrated, 7s. 6d. London, John Westhouse, 1946) is intended for the young wife and mother; any doctor may confidently recommend it to his patients. It is clearly and simply written and provides sufficient detail for the uninformed reader to know exactly what to do. The author stresses the "normality" of pregnancy and labour and urges the expectant mother to cast out fear and not to listen to the gruesome stories of her relatives and "friends." She should preferably have her confinement at home if her antenatal examination shows her to be healthy and normal, and aim at breast-feeding her baby. She should prepare herself by taking the permitted extras in her diet. The author prescribes exercises for use before and after confinement and advises on the economics of having a baby and the use of clothing coupons. She expounds in a simple manner the methods of prevention of minor ailments of mother and baby, the stages in bodily and mental development of the infant, feeding and weaning and excretory training. This little book gives all the essential information without saying too much.

Medical Memoranda

Spontaneous Haemopneumothorax

The following account of two cases may be of interest in view of the article by Crawford and Shafar in the *British Medical Journal* of Jan. 19, 1946 (p. 88). They refer to the rarity of the condition, only 43 cases having up to then been reported. Many of the points discussed by them are borne out by these cases.

CASE 1

An officer aged 28 engaged on clerical work had a history of pneumonia on the left side in 1940, followed by a further attack of pneumonia or pleurisy on the same side in 1942. He was admitted to an E.M.S. hospital at 7 p.m. on April 28, 1945, with severe pain in the right lower chest, which had come on suddenly thirty-six hours previously, and was associated with dyspnoea. Both pain and dyspnoea had been increasing in severity since their onset.

On examination he was much distressed and dyspnoeic; his temperature was 99° F. (37.2° C.), pulse 120, and respirations 32. The heart was displaced to the left. There was little movement of the right side of the chest, which was hyper-resonant, and breath sounds were absent. A diagnosis of spontaneous pneumothorax was made, and a needle was inserted into the upper part of the right chest. The intrapleural pressure was 15/20; and air was released by a Woulfe's bottle until the pressure was reduced to 4/4, giving moderate relief. During the night the patient vomited persistently, and twelve hours after admission his condition was very poor: he was pale, the pulse was weak and rapid, and the blood pressure was 70/40, suggesting an internal haemorrhage. The intrapleural pressure was now 6/6. A blood count showed: red cells, 3,360,000; haemoglobin, 57%. *X*-ray examination revealed density of the lower half of the right chest—suggesting fluid—collapse of right lung, and apical pneumothorax. Two pints (1.14 litres) of blood were given by intravenous drip, with marked improvement in the general condition and a rise in blood pressure to 120/60. Aspiration of the right lower chest was then performed, and one pint (570 ml.) of dark fluid blood was removed, with relief. In the evening a further pint of blood was given, and his condition remained fairly good; but he was still dyspnoeic, and there were still signs of fluid at the right base. Dyspnoea increased during the evening, with general deterioration in his condition, accompanied by delirium through the night.

At 2 a.m. on May 1 a needle was introduced into the upper part of the right lower chest, and the intrapleural pressure was found to be 8/9. The chest was then aspirated and a further 24 oz. (680 ml.) of blood removed. In spite of this his condition steadily deteriorated, and he died at 5.45 p.m. on the fifth day.

Post-mortem Examination (G. Stewart Smith).—The body was well nourished and of good physique. *Heart and blood vessels :* the heart as a whole was not enlarged; but there was some dilatation of the right ventricle. *Respiratory system—Right :* the pleural sac contained about two pints of blood and a large mass of clot; the lung was completely collapsed but not consolidated. At the apex and on the free borders were small emphysematous bullae. Over one of these near the apex the pleura was roughened and cracked and blood could be exuded from this area on pressure. This was probably the cause of the haemopneumothorax. There was no sign of any other source of haemorrhage. *Left :* the upper lobe showed many moderate-sized emphysematous bullae. The lower lobe was consolidated and of the consistency of liver: the appearances were those of unresolved pneumonia. *Abdomen :* nothing abnormal.

CASE 2

An airman aged 19 complained of diffuse pain all over his right chest. He returned to duty, but later in the day was seized with sudden pain in the chest and dyspnoea, and pain in the right shoulder and arm. Examination showed that the mediastinum was displaced to the left, there was loss of movement of the right side, the breath sounds were absent, and the chest was hyper-resonant. A diagnosis of spontaneous pneumothorax was made. The next day he was pale and very dyspnoeic, with cold clammy skin and pulse of poor volume. A needle was inserted into the eighth space in the posterior axillary line and blood was removed. *X*-ray examination showed a hydropneumothorax. He improved without appreciable removal of fluid until six days after the onset, when 4 oz. (114 ml.) of blood was removed, and again on the eighth and fifteenth days, when 18 oz. (500 ml.) and 1 oz. (28 ml.), respectively, were aspirated.

Two months later skiagrams showed a small residual basal axillary pneumothorax. Breathing exercises resulted in considerable improvement in function of the right chest, and there were no clinical or radiological signs of tuberculosis.

COMMENT

These case histories have several points in common with those discussed by Crawford and Shafar—for example: (1) The patients' age and sex are such as these authors find to be most common. (2) Spontaneous pneumothorax is said to be the initial event. This seems to have been so here. (3) The presence of abdominal symptoms—that is vomiting in Case 1. (4) Acute pain and dyspnoea were initial symptoms in Case 1 as of spontaneous pneumothorax. Case 2 was treated before he arrived at this hospital, but it appears that he had a dull ache before the onset of acute pain, which later may have been caused by subsequent haemorrhage. (5) In Case 1 there was a temporary improvement, although this was after the pneumothorax had been aspirated, and the recurrence of pain and dyspnoea could not be attributed to the first onset of haemorrhage. Case 2 improved with anti-shock measures and removal of fluid from the chest.

I should like to thank Mr. A. Graham Bryce for his help and criticism and Dr. Stewart Smith for the post-mortem report.

Baguley E.M.S. Chest Unit, Cheshire. J. K. MCMYN, M.B., Ch.B.

Unusual Case of Concealed Haemorrhage

Though cases of concealed haemorrhage may often occur the following case was so clear-cut that it was felt to be worth reporting.

CASE HISTORY

This patient, a woman aged 28, had had two children, 6 and 3 years old, both normal deliveries, and one miscarriage at the first month. Catamenia were always regular. The first day of the last menstrual period was May 17, 1946, and the expected date of delivery Feb. 26, 1947. She was quite well throughout the pregnancy until Feb. 2, when she complained of headache, and went to bed for the afternoon. At 5 p.m. she noticed that her abdomen had suddenly got bigger and made breathing difficult. At 11 p.m. a large clot was passed per vaginam, the first external bleeding to occur. She had a slight loss throughout the night and next day till 7 p.m., when she had an acute and very brisk loss. She had had vague backache throughout the day, but no definite "pains." The patient was admitted to hospital at 9 p.m. on Feb. 3 with colicky abdominal pains which were like "labour pains" in many respects.

On examination she was pale, but not excessively so. The pulse was 100 and of fair volume. The blood pressure was 110/70. The uterus was the size of a full-term pregnancy and firm in consistency, but contractions were not felt. The foetus was presenting by the vertex as a right occipito-anterior. The head was not engaged, and could not be made to be so. The foetal heart rate was 160. There was a very free loss per vaginam of bright-red fluid blood with some clots. Per rectum a boggy mass could be felt, but no presenting part. The cervix was not defined. A diagnosis of placenta praevia was made, and the patient was prepared for the theatre.

Examination under anaesthesia (Dr. W. A. Taylor) revealed a central placenta praevia. The abdomen was opened and a classical caesarean section performed. The placenta bulged through the incision in the uterus. Some difficulty was experienced in delivery, but eventually a living female child was born. The placenta was found to be very large—central placenta praevia in type, but extending up the walls of the uterus half-way to the fundus. Behind the membranes in the fundus of the uterus there was a big collection of blood clot and a large retroplacental clot. The placenta and membranes were removed intact. The uterus and abdomen were closed in the usual manner. The baby's weight at birth was 7 lb. 10 oz. (3.5 kg.), and it cried well. The condition of mother and child on discharge from hospital on Feb. 23 was satisfactory.

The interest in this case lies in the fact that the patient noticed the sudden increase in the size of the uterus some six hours before there was any external evidence of bleeding. This was probably due to the initial haemorrhage occurring at the periphery of the placenta.

W. ALFORD TAYLOR, M.B., B.S.
GORDON DUTTON, M.B., B.S.

The Nordic Surgical Union recently held its 23rd Congress in conjunction with the Nordic Orthopaedic Union at Stockholm. There was a discussion on "dextran"—a sugary substance used to replace blood and plasma in the treatment of shock.

Reviews

THE FALLOPIAN TUBES

Uterotubal Insufflation. A Clinical Diagnostic Method of Determining the Tubal Factor in Sterility, including Therapeutic Aspects and Comparative Notes on Hysterosalpingography. By I. C. Rubin, M.D., F.A.C.S. (Pp. 453; 159 illustrations, 4 in colour. 50s.) London: Henry Kimpton. 1947.

The method of utero-tubal insufflation is one of the most important contributions to gynaecological diagnosis and therapy of the present century. Rubin did much of the early work, and great credit is due to him both for his originality and for the skill with which he has elaborated the technique. In the present volume he has collected together all the work that he himself has done on tubal patency together with exhaustive references to the publications and opinions of other people. It is a monumental contribution, though essentially individualistic.

The volume reveals the extraordinarily wide interests of the author, for he has done a large amount of work on experimental animals and in clinical practice. The early part of the book, with its full discussion of physiological problems, is of absorbing interest. A careful study of the book gives the impression that nothing appertaining to the patency and function of the Fallopian tubes has ever escaped Rubin's attention. The discussion on the function of the fimbriae and on the transport of the ovum is of great value. The same intelligent mind is applied to clinical problems. The original apparatus has gradually evolved, and the excellent photograph on p. 164, which should occupy the frontispiece, perfectly illustrates his consummate technique. Rubin's clinical experience has been wide, and he has kept accurate records which enable him to furnish useful statistics. The chapter on the comparison of insufflation with lipiodol injection is one of the best, and the summing up is judicial. The references are complete.

Though it is hardly suitable as a work of reference, all practising gynaecologists should study the book from cover to cover. Unfortunately the paper and print are much below the quality of the subject matter, and we regret that the publishers of such a fine work, by a gynaecologist of world-wide fame, have not produced the book better.

WILFRED SHAW.

MALNUTRITION

Problems of Malnutrition and Starvation during the War. Twentieth Sir Jesse Boot Foundation Lecture delivered by Sir Jack Drummond, D.Sc., F.R.I.C., F.R.S. (Pp. 21; 1s. 6d.) Nottingham: University College.

The first Sir Jesse Boot Foundation Lecture was given in 1922 to commemorate the generosity of the first Baron Trent in founding the Sir Jesse Boot Chair of Chemistry in University College, Nottingham. As we are told in a footnote to the title page, "the Lecture is delivered annually on some aspect of chemistry bearing on the life of the community or the industries of the City of Nottingham." A study of the titles of the 20 lectures which have been given reveals an interesting metamorphosis in the subject matter. Whereas the first eight dealt with evolution in chemical industry, subsequent lectures have passed through agriculture to pharmacy and thence to biochemistry. For the twentieth lecture Sir Jack Drummond chose to discuss problems of malnutrition and starvation during the war. No one is better qualified than he to speak on this subject, for as Scientific Adviser to the Ministry of Food he was largely responsible for the scientific feeding of the nation during the war, and after the liberation he obtained first-hand information on conditions in Western Europe.

After a preamble comparing the human machine with man-made machines, Drummond first deals with a few of the more important facts upon which modern nutritional views are based and points out how the knowledge amassed between the two wars enabled us during the 1939–45 period to calculate the daily requirements needed to preserve the health of people of different ages and occupations. The report of nutrition experts sent by the Rockefeller Health Commission to Madrid in 1941 gave us valuable information on the nutritional condition of the people during the Spanish Civil War, in which there was a shortage of calories, though few signs of malnutrition. The lecturer then considers the conditions in Western Europe after the liberation and reveals how difficult it was to get a true account of the situation from all the conflicting reports from the various occupied countries. According to some of these the daily calories available were less than half the total required to preserve health, which meant that semi-starvation existed. If this were true, then it was important to discover what was the quantity and kind of food that could be obtained apart from the rations. Experts exiled in Britain had been able to give us valuable information on the agricultural resources of the various occupied countries, and this enabled us to assess the food that might be available to the peoples concerned. The importance of this was that we had to judge whether the general picture would be one of calorie shortage or of dietary deficiency.

In the cities of France and Belgium the people presented the typical picture of calorie deficiency, though it was by no means serious. In general the children below 5 years of age were in a good nutritional state, and high death rates were due to bad housing rather than to poor feeding. Diseases of malnutrition were not common.

In West Holland conditions were much more serious. The principal reason for the bad nutritional state of the Dutch people was that the Germans had cut food supplies as a punishment for their loyal response to our appeal to them to paralyse the railways in the late autumn of 1944. By March, 1945, the calorie value of the rations, which had been about 1,700, dropped to as low as 500 a day, which was sheer starvation. At short notice plans were prepared for dealing with some hundred thousands of people dying of starvation, but little was known of how to revive people in that condition. It was assumed that those near death could not easily take food by mouth and that even readily digestible food is not easily assimilated. For this reason we prepared large quantities of predigested meat or milk protein supplemented by glucose and vitamins for intravenous administration or to be given directly into the stomach by tube. In case of these measures failing, however, we also held in readiness large quantities of skimmed milk. Experience gained when Belsen was liberated showed that the intravenous injection of predigested food tended to worsen the dropsical condition of the hunger-oedematous patient, and given by the mouth the food was not palatable. Skimmed milk proved to be the best remedy, since this combined with glucose could be given in increasing quantity until the intake was built up to over 3,000 calories a day. A final important point brought out is the fundamental importance of wheatmeal or wholemeal bread, potatoes, and vegetables, for they afford protection against dietary deficiencies even when the total of the calories provided by these restricted diets is small.

Such an able exposition of the problem, set out in plain language for the understanding of the general public, by one who has had the experience and possesses the necessary knowledge and judgment to assess such conditions, is of great value, and we welcome its publication.

I. DE BURGH DALY.

MALE FERTILITY

Studies on Impaired Fertility in Man, with Special Reference to the Male. By Rich Hammen. Translated from Danish by Hans Andersen, M.D. (Pp. 206; illustrated. 10s.) Copenhagen: Einar Munksgaard. London: Geoffrey Cumberlege (Oxford University Press). 1944.

This monograph is based on a study of 1,184 specimens of semen received from 925 male partners of infertile marriages and from 32 control subjects of known fertility. In 277 cases semen analysis was accompanied by full clinical investigation of both husband and wife. One chapter is devoted to the findings in the female in order to provide the proper perspective, the others to those in the male. The author considers the various characteristics of seminal fluid (excluding chemical analysis) and of spermatozoa, clearly describes the techniques employed and the results obtained, and interprets them cautiously and without prejudice. Like most recent workers on the subject Hammen finds it difficult to come to definite conclusions on criteria of "normal" seminal values, and he makes out a good case for abandoning the very high standards set by some writers, pointing out that they are ideal rather than practical. One of the most interesting features is the description of a method of vital staining of spermatozoa, based

on the use of brilliant cresyl blue and trypan blue, in order to distinguish the living from the dead. Hammen also gives an account of his attempts to apply Sorensen's method for studying the anaerobic metabolism of human spermatozoa. The terminology is sometimes unusual: "sperm" is preferred to "semen," and "aspermia" to "azoospermia," while "aspermatism" is used to denote failure to ejaculate any fluid. There are a few slips—one in the nature of a "howler": "the sperm was poured from the beaker into the graduate." On the whole, however, the English translation reads well.

As the title implies this book is not intended to be a complete dissertation on male infertility: it is an account of those of its aspects personally investigated by the author. As such there is little to criticize adversely in it. Indeed the book is not only interesting and informative but stimulating; its caution alone makes the reader wish for more. Had this book been available in Britain when it was first published in 1944 it would have appeared more striking and have attracted a good deal of attention; as it is, much of its thunder has been stolen by writers in the U.S.A. and in this country during the last three years, and Hammen's work is made to appear confirmatory rather than original. The references too, although numerous and valuable, are necessarily not quite up to date. Nevertheless, representing as it does a factual account of a large-scale investigation, the work remains important, and its essential value is undiminished by the passing of the years. Those interested in male fertility, and particularly in seminology, will welcome it.

T. N. A. JEFFCOATE.

BIOCHEMISTRY OF TUMOURS

Biochemistry of Cancer. By Jesse P. Greenstein. (Pp. 389; illustrated. $7.80.) New York: Academic Press Inc. 1947.

The serious study of the biochemistry of cancer began in the early 1920s after pathologists had developed methods of transplanting and inducing animal tumours. This monograph gives an excellent account of the efforts of biochemists in the field of cancer research, with some emphasis on the American contribution. Dr. Greenstein's own researches have been mostly into the comparative enzymology of normal and malignant tissues, and in a large part of this book he considers this type of work under the title of "The Properties of Tumours." This account will be useful both to cancer research workers and to biochemists in general, for the former have determined many of the chemical components and enzyme activities of normal tissues for comparative purposes. The kinds of enzymes or other components of tumours are not different from those of normal organs, but the relative amounts and activities are. Dr. Greenstein's general conclusion is that tumours resemble each other in their chemical properties more than they do the normal tissues or than normal tissues resemble each other. The metabolic pattern of tumours is very similar in all species that have been studied.

The author also discusses the pathology of tumours, the extrinsic and intrinsic factors in the induction of tumours, the chemistry of the tumour-bearing host, and attempts at the control of tumour induction and tumour growth by nutritional, hormonal, and chemotherapeutic methods. Most of the work described is in stages of development at which it is impossible to draw general conclusions, but it needed collating as Dr. Greenstein has done it. There are many typographical errors, and the list of references is incomplete. The usual reference given to a fact is the one in which the data are most completely described rather than the reference in which it was first described. The section on the properties of tumours is more complete than the other parts. The author keeps closely to his subject and gives little account of the biochemical effects of radiations. It is undoubtedly the best book in this field, and it is something of a triumph for one author to be able to discuss so many facts with insight.

E. BOYLAND.

Miracle Drug: the Inner History of Penicillin, by David Masters (Eyre and Spottiswoode: 10s. 6d.), is one of the better popular books on medical subjects, because the author has evidently taken care to obtain his information from authoritative sources. It is in narrative form, and some of the episodes described, as well as much of the purely scientific information on the laboratory study and commercial manufacture of penicillin, will probably be new to most medical readers.

BOOKS RECEIVED

[Review is not precluded by notice here of books recently received]

Equinococosis Pulmonar. By M. A. Mallen. (Pp. 100. No price.)

A thesis (in Spanish) on hydatid cysts in the lungs.

A Textbook of Medicine. Edited by Russell L. Cecil, A.B., M.D., Sc.D., *et al.* 7th ed. (Pp. 1,730. 50s.) London: W. B. Saunders Company. 1947.

New subjects discussed include deficiency of vitamins A, E. and K. psychosomatic medicine, acrodynia, and drug allergy.

Surgical Pathology. By William Boyd, M.D., F.R.C.P. 6th ed (Pp. 858. 50s.) London: W. B. Saunders Company. 1947.

This edition includes new material on congenital heart disease, tumours of the larynx, avitaminosis in cancer of the mouth, and fibrositis of the back.

The Child from Five to Ten. By Arnold Gesell, M.D., and Frances L. Ilg, M.D. (Pp. 475. 18s.) London: Hamish Hamilton. 1947.

An account of the mental development and behaviour of children from 5 to 10.

Return to Night. By Mary Renault. (Pp. 356. 10s. 6d.) London: Longmans, Green and Co. 1947.

A novel.

A Bibliography of Infantile Paralysis, 1789–1944. Edited by Morris Fishbein, M.D. (£4 10s.) London: J. B Lippincott Company. 1946.

Short notes abstract the contents of many of the references; includes subject and author indexes.

Recent Advances in Public Health. By J. L. Burn, M.D., D.Hy., D.P.H (Pp. 409. 25s.) London: J. and A. Churchill. 1947.

A review of recent advances, with important references and many illustrations.

De Lee's Obstetrics for Nurses. By M. E. Davis, M.D., and M. C. Carmon, R.N. 14th ed. (Pp. 640. 15s.) London: W. B. Saunders Company. 1947.

An account of pregnancy, labour, and the puerperium for nurses; with glossary.

Science News IV. Edited by John Enogat. (Pp. 171. 1s.) West Drayton, Middlesex: Penguin Books. 1947.

A variety of scientific topics discussed for the layman.

Ethics: With Special Application to the Nursing Profession. By J. B. McAllister, S.S., Ph.D. (Pp. 442. 14s.) London: W. B. Saunders Company. 1947.

A discussion of ethics in relation to medicine by the Assistant Professor of Philosophy at the Catholic University of America.

The Objective Method of Dream-Interpretation. By Major Satya Nand, M.B., B.S., I.M.S.(RLD), P.C.M.S. (Pp. 251. Rs.9.12.) Lahore: Northern India Printing and Publishing Co. 1947.

An account of dream interpretation for layman as well as specialist.

Biologists in Search of Material. Edited by G. Scott Williamson, M.D., and I. H. Pearse, M.D. 2nd ed. (Pp. 107. 5s.) London: Faber and Faber. 1947.

A description of the work done at the Peckham Health Centre.

Biochemistry for Medical Students. By W. V. Thorpe, M.A., Ph.D. 4th ed. (Pp. 496. 18s.) London: J. and A. Churchill. 1947.

Contains new material on isotopes in biochemical investigations, on protein structure, bile pigments, and nutrition in wartime.

Common Skin Diseases. By A. C. Roxburgh, M.A., M.D., B.Ch., F.R.C.P. 8th ed. (Pp. 497. 21s.) London: H. K. Lewis. 1947.

Includes accounts of penicillin, D.D.T., and calciferol in dermatology.

BRITISH MEDICAL JOURNAL

LONDON

SATURDAY SEPTEMBER 13 1947

CUTS IN RATIONS

The meat ration has been cut. The ordinary individual can now spend only 1s. a week on meat instead of 1s. 2d., and the number of "points" available each month has been reduced from 32 to 28. The direct effect of these cuts on our nutrition will not be serious. The figures for our consumption of calories and nutrients that are most commonly quoted are derived from estimates of food imported and produced in the country; these estimates, of which a recent example appears elsewhere in this issue (p. 427), are a very poor index of the actual amounts eaten by average families. Surveys of food consumed at home by representative families have been conducted by the Ministry of Food since 1941; the results have been treated as confidential, but Drummond[1] has published some details. Judged by the restricted standards of the National Research Council (U.S.A.) our average food consumption in July and August, 1945, was adequate in all respects except that the vitamin A content might have been too low owing to failure to use carotene, and the vitamin C content too low because of losses in cooking. At that time the weekly bacon ration had been cut to 3 oz. (85 g.) and cheese to 2 oz. (57 g.) and the amount of animal protein available daily was 34 g.

The survey of school-children's diets made by Bransby and Wagner[2] in 1943–4 in Stoke-on-Trent and Salford showed that the average calories were well up to requirements, that animal protein was over 30 g., and calcium alone was deficient. The dullness, which was the fault of these diets up to 1945, is not shown in the estimates of calories and nutrients, though it might be suspected from the level of animal protein. Changes in our rations between August, 1945, and August, 1947, were not sufficient to affect the supply of animal protein, minerals, or vitamins seriously. Judging by the figures that have been published, the intake of calories has remained adequate in spite of the rationing of bread. The chief result of the present cuts will be to make our diet still less varied and less appetizing.

The present cuts may be forerunners of more drastic changes. So long as the rate of extraction of flour is kept up there will be no lack of vitamins of the B group. Vitamins A, C, and D come mainly from sources that are not likely to be affected. The main danger is to our calories, for though the average has been enough there has been no margin. Bransby and Magee[3] showed that it was, and it still is, difficult for heavy workers who were not eating meals in canteens to get sufficient calories without consuming larger amounts of potatoes than our supplies allowed. At the time when we published this paper it was impossible for many people to buy 2 lb. (900 g.) of potatoes a week. Even if the cuts do not seriously reduce the number of calories available, there is a danger that the intake may fall. In 1941, according to Drummond, the average calorie intake fell to about 2,100, although there was no restriction on the number of calories that could be taken in the form of bread. It is uncertain how far this reduction was due to failure to adapt habits to the changed supply of food; but it was in part secondary to the dullness of the food, and particularly to the lack of foodstuffs to eat with bread. When lend-lease supplies brought a greater variety the intake of calories rose. Further cuts now of the "points" food that lends variety to our diet will be followed by a similar fall in calories.

Any reduction of the calorie intake, whether primary or secondary, may lead to a drop in production. Therefore if more cuts are coming it will be necessary to consider further differential rationing for manual workers, graded according to the type of labour. At present manual workers (not included in certain special categories) get each week an extra 42 oz. (1.2 kg.) of bread, or its equivalent, without anything to go with it. Miners—where the majority do not use canteens—get a total of 189 oz. (5.4 kg.) of bread a week with an extra ten-pennyworth of meat and 12 oz. (340 g.) of cheese. The most welcome extra ration, apart from more bread units, would be neither meat nor cheese but some form of "visible" fat. The lowness of the present fat ration is quite the worst obstacle to varied and interesting cooking.

[1] *Sth. med. J.*, 1946, **39**, 18.
[2] *British Medical Journal*, 1945, **2**, 682.
[3] Ibid., 1947, **1**, 524.

THE FUTURE OF NURSING

The report of the Working Party on the Recruitment and Training of Nurses, of which the main recommendations are briefly summarized elsewhere in this issue (p. 426), must be regarded as the judgment of the community upon the shortage of nurses. There is no body in the nursing profession that could have undertaken this task, for to an important extent the statutory limitations of the General Nursing Councils have helped to bring about the present difficult position. The recommendations of the Working Party can be assessed properly only in the light of some knowledge of how and why the present critical shortage of nurses has arisen.

The General Nursing Councils are concerned solely with the maintenance of a register of nurses and the regulation of the examinations that give admission to it. They have no concern with, and, it might be argued, are actually precluded from taking account of, the supply of nurses, though the conditions they impose must affect recruitment. The curriculum may be so long, and the syllabus so academic, or the examinations so exacting that potentially good nurses are deterred from entering the profession or fail to qualify, but the G.N.C. take no cognizance of this. By refusing to recognize as teaching schools hospitals with less than 100 beds the G.N.C. may make it impossible for them to obtain enough nurses; but, again, the Nursing Councils do not take that into account. At least in this respect the governing bodies of the nursing profession possess power without responsibility, and, though there are many causes for the present shortage of nurses over which the G.N.C. have no direct control, it is the lack of a body that has a responsibility in the matter that has called for action by the Government.

The educational policy of the Nursing Councils, supported by all but a few of their members, has often been

expressed. It is to raise the academic status of nursing, in the belief that this will attract an increasing number of intelligent women who wish to understand the theory of what they do—hence a syllabus which, with its load of anatomy, physiology, and theoretical medicine, more and more resembles that laid down for medical students. Any criticism of this policy is regarded not only as a betrayal of the cause of the intellectual woman but also as short-sighted, because, it is claimed, any lowering of the standard will keep potential nurses out of the profession. It is always assumed that there are enough women of the degree of intelligence required to implement this programme. For the first time the Working Party has provided evidence on this point. About half of all present-day nurses leave school at 14 or 15, and only one-fifth reach school certificate or a higher educational standard. Intelligence tests show a wide range of ability; whereas some 40% of nurses falls within the top 30% of the population in intelligence, one quarter of the profession is among the lowest 30%. Obviously, then, we cannot now, or in the foreseeable future, staff the hospitals of this country with nurses who satisfy the intellectual requirements of the G.N.C., and the attempt to impose these high standards must turn away from nursing many otherwise suitable candidates, and also contribute substantially to the present alarming wastage.

The remedy which the Working Party proposes is a shorter and necessarily simpler, but at the same time more comprehensive, training. It suggests that time could be saved by the elimination of domestic work and unnecessary repetition, and by more efficient training. Nurse Training Units should be set up and should be independent of individual hospitals and responsible for co-ordinating all the educational facilities in the region for the benefit of the student nurse. All nurses would have fundamentally the same training, with opportunities for some specialization during the latter part of the two years of the course and in the first year of work after qualification. There can be no doubt that much of the time laid down as necessary for the training of nurses in the past has been called for because the student nurse has been required to do much of the domestic and routine work of the hospital. The new proposals could not succeed, therefore, without an adequate supply of domestic labour for hospitals, and the suggested replacement of the assistant nurse by a nursing orderly is also an integral part of the scheme. Much time would then be saved and the barriers between the different branches of nursing would be broken down. These proposals, of course, are not free from dangers. Repetition in training is not entirely a disadvantage, and it would be deplorable if the student nurse were ever to believe that, having been signed up for a limited number of hypodermic injections, she need give no more until after qualification. The student who is merely a student may find it hard to develop the sense of responsibility towards her patients that the student nurse feels at present and that forms such an important part of her training. The disappearance of the individual hospital as a training unit would mean the immediate loss of a sense of loyalty which it would be difficult for a Nurse Training Unit to re-create. But there is no progress without risks, and if these proposals are to be put into practice the new educational bodies will need the courage and vision to inspire something like the spirit of a university.

Reform of the General Nursing Councils is overdue, and in this sphere the proposals of the Working Party are indefinite. They suggest that Regional Nurse Training Boards should be set up but do not define their relationship to the reformed G.N.C., which, moreover, would still appear to control nursing education without having to take account of the effects of its policy on recruitment. It is proposed that the Minister of Health should still have the power to veto the syllabuses of the G.N.C., but it seems desirable that the last word on all matters of nursing organization, recruitment, and education should be given to a central advisory council.

Discussing the loss of nurses in training, the Working Party states that "the type of discipline which pervades the training schools to-day is unquestionably the most important cause of wastage." This has long been known, but remains largely unremedied. Historically derived from the organization of religious orders, copied in its turn from military models, nursing discipline is now more dictatorial than that found anywhere else in the lay world and is far more irksome than Service discipline. A commanding officer does not personally take account of the peccadilloes of the lowest ranks, as the matron often does in the case of the student nurse. In nursing there is, to adapt John Knox's phrase, a monstrous regimentation of women. The committee hint at psychological reasons for this, and psychologists could undoubtedly make a valuable contribution towards increasing the happiness of hospital life. Every nurses' training school should have a governing body which ought to include two or three married women with grown-up children; the matron should be this governing body's executive officer. There is much to be said for putting discipline in the nurses' home or hostel under the control of a warden directly responsible to the governing body, and for limiting the authority of the matron to education and ward discipline. In large cities where there are several small hospitals joint residential hostels under their own wardens might be set up with advantage. Much could be done along these lines at once; later, the proposals of the Working Party would go a long way to free the student nurse from a purely local autocracy.

It is a measure of the present crisis that, when industrial and domestic work are criticized as drab and monotonous, a profession as rich in varied interests as nursing cannot get enough recruits. The Working Party has brought courage and vision to its difficult task. Let its critics be equally courageous and constructive.

SUBCLINICAL POLIOMYELITIS

In 1945 a team of workers in Chicago began a co-ordinated study of poliomyelitis. They undertook careful history and neighbourhood studies, recorded the daily temperatures of contacts, examined the cerebrospinal fluid two to five weeks after the onset of fever, and tried to detect the presence of virus in specimens from the nose, throat, mouth, and stools of those persons whose temperatures were taken. A paper[1] describing some of the results obtained was mentioned by Kelleher[2] in an article we published recently. Daily determinations of the axillary temperature were made between 5 and 25 days (usually 6 and 21 days) after the known exposure of 22 children to a patient with polio-

[1] Casey, A. E., *et al.*, *Amer. J. Dis. Child.*, 1947, **72**, 661.
[2] *British Medical Journal*, 1947, **2**, 292.

myelitis in the infectious period. Of these 22 children, 14 had a febrile illness between 7 and 25 days after exposure. This illness was believed to have been poliomyelitis. No such febrile illness was detected in 15 children not so exposed who lived within a radius of one block of the patients and were of comparable age. Among the 14 contacts who had fever, one had frank poliomyelitis with transient paralysis and two had frank poliomyelitis without paralysis but with stiff neck, stiff back, head drop, and increased cells and protein in the cerebrospinal fluid. Four other children (28%) had fever and mild symptoms but without stiff neck, stiff back, or paralysis. Two of the four had a lumbar puncture between two and five weeks after the onset of fever, and the cerebrospinal fluid protein was above 45 mg. in each instance. The other seven children (50%) had axillary temperatures ranging from 98.8° to 99.8° F. (37.1 to 37.7° C.) and seemed to have had no symptoms. Four of these seven, two to four weeks later, had a lumbar puncture which again showed a protein level of 45 mg. or more. Examination of the stools revealed the presence of virus just before or at the onset of the prodrome among most of the contacts with subclinical fever.

Illnesses regarded as compatible with poliomyelitis were most common in the younger children in this series. Though the evidence is scanty and needs further investigation, the authors point out that it indicates that in perhaps 98% of cases poliomyelitis is a mild, widespread, highly communicable disease of young children leaving no residual paralysis. Transient paralysis occurs in about 5% of all cases and the meningitic form in about 14%. The fatality rate in these Chicago studies does not appear to exceed 0.7%. Residual paralysis seems to be infrequent, affecting probably not more than 2%. It is suggested that the most intimate child contact of an infectious patient should be isolated during the period of five to fifteen days after exposure. Daily determinations of the axillary temperature should be made, and if it rises above 99.4° F. (37.4° C.) for a single day, or 98.8° F. (37.1° C.) or more on consecutive or alternate days, the stools should be collected and the virus sought. Estimation of the cerebrospinal fluid protein three to five weeks after the onset of fever is recommended in suspected cases.

CANCER MORTALITY

In the opening pages of this issue Sir Heneage Ogilvie stresses the importance of early diagnosis in cases of cancer of the oesophagus and stomach. He emphasizes especially the fact that cancer is "the chief cause of death in men and women in the years after 40." The General Register Office published on Sept. 11 the first of a new series of occasional publications with the object of providing in a convenient form a more extensive treatment of important subjects than is practicable in the Annual Review. It is well known that the mortality from cancer has increased during recent years—making the need for early diagnosis the more urgent, and the rate of increase has been greater for males than for females. The crude death rate for males was 1,586 per million in 1935 and 2,263 in 1945, while the corresponding rates for females were 1,617 and 1,784. An increased incidence has been recorded for most sites, the most spectacular rises being those for cancer of the digestive organs and peritoneum and of the lungs and pleura. A feature of the rates of mortality is the large differences that exist between various localities. These local differences in cancer death rates have been examined by Stocks[1] in the first of these new publications.

The two sites, stomach and respiratory organs, which have had the largest increase in mortality from cancer show opposite trends in relation to urbanization. The proportion of cancer deaths due to gastric cancer is lowest in London and the county boroughs and highest in the rural districts, while the mortality from cancer of the respiratory tract is much higher in the urban than in the rural areas. Cancer of the stomach is closely correlated with social indices; cancer of the lung shows no such correlation. The standardized mortality ratio for cancer of the stomach ranged from 55 for social class 1 to 122 for social class 5 for males; the corresponding values for married women were 49 and 121. A high death rate from cancer of the stomach is found in the northern and central counties of Wales. A comparison was made for the thirty largest towns of the comparative mortality of men from cancer of the stomach, lung, and other sites with a social class and overcrowding index. Cancer of the stomach was significantly correlated with the overcrowding index ($0.543 \pm .129$), and with the social class index ($0.526 \pm .132$), but cancer of the lung and cancer of other sites were not correlated with these environmental indices. Lung cancer was negatively correlated with the total hours of bright sunshine ($-0.690 \pm .117$). The mortality ratios were 58 for the towns with over 1,400 hours of sunshine annually, 100 for the towns with 1,150 to 1,400 hours of sunshine, and 152 for the towns with less than 1,150 hours of sunshine.

Among females in the thirty large towns the worst social conditions were associated with high mortality rates for cancer of the stomach and the uterus and with low death rates for cancer of the breast and of the ovary. The best social conditions were associated with a low mortality from cancer of the stomach but with a high death rate from ovarian cancer. There was no significant variation with social conditions for cancer of the breast and uterus combined.

Since the facilities for diagnosis and treatment are fairly uniform throughout London the experience of the London boroughs was examined in detail. The mortality among males was highly correlated with the overcrowding index in cases of cancer of the stomach ($0.744 \pm .084$) and for cancer of other sites ($0.539 \pm .134$), but cancer of the lung showed no association with the social index ($0.034 \pm .181$). The standardized mortality from cancer of the stomach of women in London was highly correlated with the housing index ($0.715 \pm .094$), while the mortality from cancer of the breast was negatively correlated ($-0.779 \pm .074$). In the case of some sites of cancer wide disparities between different boroughs could not be explained by varying social conditions. In seeking an explanation of these differences, which occurred in groups of adjacent boroughs, Stocks examined the source of the water supplies. Grouping by water supply gave five groups of boroughs. There were some interesting contrasts between these groups. The four boroughs supplied by wells had a high mortality rate for cancer of the stomach but a low rate for cancer of the mouth and tongue, oesophagus, and rectum. The eight boroughs supplied by the Thames Western had a low rate for cancer of the stomach but a high mortality rate for the other three sites. Five boroughs supplied by the Lea River had a high mortality rate for cancer of the stomach and lungs and a low rate for all other sites. The correspondence in certain respects between the source of water and cancer death rates does not prove that there is a causative connexion.

It appears that cancer of the stomach is associated with some factor not connected with economic or housing conditions, a factor which may be related to differences in the

[1] Studies in Medical and Population Subjects, No. 1. Stocks, P., *Regional and Local Differences in Cancer Death Rates.* H.M.S.O., 1s.

dietary or cooking habits of the population in different parts of the country. There are no data available on feeding habits in different areas and experimental evidence as to whether any method of cooking produces carcinogenic substances is at present inconclusive. Cancer of the lung seems to be associated with atmospheric conditions, influenced, as measured by sunshine, partly by geography, partly by climate, and partly by the smokiness of atmosphere. The final conclusion stated by Stocks is : "Cancer is a grave problem and no effort should be spared to investigate every possible clue, no matter how unlikely it may seem at the moment that it will prove fruitful."

THE HEALTH OF BERLIN

Eighteen months ago we published one of the first full accounts of the public health problems of Berlin. Horsburgh and Raeburn[1] described the difficulties encountered by the Public Health Section of the Military Government. Typhus, typhoid, and dysentery were important problems then. Now the story has been carried a stage further, elsewhere in this issue, by Dr. Melvin (p. 407), and the emphasis has shifted. Typhus has disappeared owing to careful control measures and the efficacy of D.D.T. In the last six months of 1945 there were 12,740 cases of typhoid in the devastated capital. Now there are relatively few cases, and the decline in incidence has been steady since a certificate of inoculation was required before the issue of new ration cards. Dysentery is still present, but there has been an improvement in the previously high death rate.

The major threats to the public health in Berlin to-day are tuberculosis and venereal disease. Melvin describes how barracks and schools have been converted into hospitals for the tuberculous and how the imaginative "Operation Sanatorium" allowed 500 patients a three-months stay in Schleswig-Holstein. Much has been done, but how much more remains to be done is indicated by a recent report from the Berlin correspondent of *The Times*,[2] whose figures are in close accord with those given by Melvin. Berlin has over 70,000 notified cases of tuberculosis and little hope of isolating many of the 22,000 active cases.

It is difficult to estimate the full incidence of venereal disease, but Melvin points to the "steadily rising rate of syphilis," and *The Times*' correspondent draws attention to one of the most fantastic of the quadripartite absurdities : "In the British and American sectors Germans with venereal disease are treated with penicillin ; in the Russian and French sectors there is no penicillin for them." It is worth noting, too, that those German journals which have reappeared are now devoting space to the treatment of neurosyphilis. Lord Moran gave timely warning of the risks of venereal disease in an army of occupation made up of young conscripts[3] and the same problem was also discussed in the Commons.[4] Parental anxiety on this score is not likely to be relieved, however, until such figures as are available show a marked and continuing downward trend.

Every kind of disease control is rendered the more difficult in Berlin by serious overcrowding. Infantile mortality is still at the rate of 132 per 1,000 live births, which may be compared with our 1945 figure of 46 per 1,000. What remains to be seen is the effect upon this and other indices of the public health of the coming winter, continued overcrowding, and probable food shortages. In presenting his report on the world food situation to the Food and Agriculture Organization, Sir John Boyd Orr said recently that in the coming winter "many millions in Europe and Asia would be worse fed than they had been during the war."[5] Penicillin may be, but food shortages cannot be, contained within zonal barriers. All Europe is likely to suffer, ourselves included, and Germany perhaps most of all. There is not yet so much apprehension about the approach of winter as there was last year.[6] The normal consumer ration is apparently being honoured now as it could not be six months ago.[7] But there must be few officials of our Military Government who will not be relieved to see the winter over, and this must apply especially to those whose concern is the public health.

SLEEP-WALKING

Sleep-walking always fascinates the lay public but has received little attention from the medical man. The paradoxical fact that during sleep complicated manœuvres may be carried out of which there is no subsequent recollection shakes man's faith in the dominance of his will over his acts. It is well recognized that deeply based emotions and drives may be given an outlet in such incidents, and this is the foundation on which are built both the drama of the sleep-walking scene in *Macbeth* and the witty trivialities of Peter Arno and others.

In medical practice sleep-walking is seldom an isolated complaint. It is fairly frequent in children, and occasionally a mother may bring a child to her doctor because his somnambulism seems likely to lead him into possible danger. Pai[8] points out that sleep-walking which shows signs of an unimpaired lucidity of memory and spatial orientation cannot be accompanied by any real dimming of consciousness ; when it occurs the strong suspicion arises that it has involved a considerable measure of deliberation.

Sleep-walking was common during the war in cases of acute neurosis brought on by combat experience. In his large series of 117 patients Pai found that 71 belonged to this group. The patient starts out of his sleep, almost certainly in the course of a vivid dream, imagining himself back in battle. He shouts orders, struggles, smashes his fist against the wall. All the signs of an acute anxiety attack are present, and awareness of the environment hardly exists apart from retained responsiveness to painful stimuli and a terror reaction to loud noises. Sleep-walking may also occur in chronic anxiety states, but is much less common ; less emotional distress is exhibited during the somnambulism, in which also there may be a better appreciation of the environment. The patient may, for instance, get up and go out of the house for a purposeless walk, though it is still probable that he will be unable to respond in an intelligent way to conversation or to engage in any complex activity.

Somnambulistic behaviour may reach a high level of complexity in hysterical states, and then it shows practically no distinguishing features from the well-known hysterical fugue. Motivation in the acts performed is usually visible at sight, or to be found after inquiry ; and that they have been done during somnambulism merely absolves the individual from the necessity of feeling himself responsible.

Prof. L. S. P. Davidson, M.D., F.R.C.P., has been appointed an Honorary Physician to the King in Scotland, in the room of the late Col. John Cowan, LL.D., D.Sc., M.D.

[1] *British Medical Journal*, 1946, **1**, 423.
[2] *The Times*, 1947, Aug. 27.
[3] *British Medical Journal*, 1947, **1**, 867.
[4] Ibid., 1947, **2**, 37.
[5] *The Times*, 1947, Aug. 27.
[6] *British Medical Journal*, 1946, **2**, 821.
[7] Ibid., 1947, **1**, 684.
[8] *J. ment. Sci.*, 1946, **92**, 756.

RECRUITMENT AND TRAINING OF NURSES

REPORT OF WORKING PARTY

The Working Party to examine the recruitment and training of nurses, composed of Sir Robert Wood, K.B.E., C.B. (chairman), Miss D. C. Bridges, R.R.C., S.R.N., S.C.M., Miss E. Cockayne, S.R.N., S.C.M., J. Cohen, Esq., M.A., Ph.D., F.B.Ps.S., and T. D. Inch, Esq., C.B.E., *M.C.*, M.D., F.R.C.P.Ed., D.P.H., was set up in January, 1946. It has now issued its Report,[1] which is signed by four members; Dr. Cohen is preparing a minority report. The Working Party was asked to survey the whole field of the recruitment and training of nurses of all types, including such problems as the proper task of a nurse, the training required to equip her for that task, the annual intake needed and how it can be obtained, from what groups of the population recruitment should be made, and how wastage during training can be minimized. The Working Party particularly bore in mind the nature of the nursing force likely to be required in the National Health Service. In discussing the long-term solution of the problem of staffing the nursing services, the Report points out that an important aspect is reducing the burden of sickness, and suggests that it might be necessary to allocate more funds to medical research, public health work, and such general measures as improved nutrition and housing.

TABLE I.—*Civilian Nursing Strength in Great Britain at End of 1938 and 1945*

	End of 1938 (Thousands)	End of 1945 (Thousands)
Trained nurses and midwives:		
In hospitals	46·7	47·5
Elsewhere	32·1	30·1
Total	78·8	77·6
Per 1,000 pop.	1·7	1·6
Other nurses (including student nurses and pupil midwives):		
In hospitals	67·6	79·9
Elsewhere	11·6	16·1
Total	79·2	96·0
Per 1,000 pop.	1·7	2·0
Total	158·0	173·6
Per 1,000 pop.	3·4	3·6

It will be seen from Table I that, while the total strength of the nursing force increased by over 15,000 between 1938 and 1945, there was a small decline in the number of nurses and midwives in active employment. The great majority of hospital nurses are single, under 10% being married at the time of the inquiry, and the Report comments: "The high proportion of unmarried is not surprising in view of the impediments to promotion placed in the way of married nurses." It was found that in public health a much higher proportion—one in four—are married. Investigating the educational level of nurses, the Working Party found that nearly half those in hospitals, including students, received full-time education up to the age of 14 or 15 only. Another 30% received further education without reaching school certificate standard, one in six reached school certificate or matriculation standard, about 4% higher certificate standard, and only one in two hundred had a professional diploma or university degree. In Scottish hospitals a rather higher proportion have been educated to higher school certificate standard or beyond—about 13%. At voluntary general hospitals about 36% reached matriculation level or above, whereas in municipal hospitals the proportion is about 15%. More than half the nurses in hospitals have been employed in some other occupation before entering nursing. The most popular year to start nursing is the 19th, when one in every five enter; 50% start before they reach the age of 20, and 50% afterwards.

Suitability for Nursing

The Working Party came to the conclusion "that candidates should be accepted at the age of 18 years, though not younger, perhaps, but every encouragement should also be given to candidates of more mature years. Nor should any obstacle be put in the way of candidates who are married." They tested a random sample of nurses with two intelligence tests—one non-verbal, the progressive matrices 20-minute version, and the other a verbal test devised for use in the Army. Pressure of time has allowed them to analyse only the results of the former. The Report emphasizes the striking range of ability revealed by these tests: "There are many more nurses in the upper ranges of ability as compared with corresponding proportions in the general population, and fewer in the lower ranges." On the other hand, if the training of nurses requires students of at least average ability, "then possibly as much as 30% of the present student population would seem to be unsuitable for admission to training."

Nurses in mental hospitals and institutions were found in general to have a lower level of ability than those in non-mental hospitals. The Working Party takes the view that a small number of nurses should receive a university training in order to produce leaders and teachers of high professional standing. The estimated intake of student nurses to all types of hospitals other than maternity is shown in Table II. Over the seven years 1937–43 the annual intake was about 23,000. Of these about 12,400 (54%) were lost during training.

TABLE II.—*Summary of Estimated Intake and Wastage of Student Nurses from 1937 to 1943*

Type of Training	Average Annual Intake	Average Wastage	Wastage as a Percentage of Intake
General:			
Voluntary	8,900	3,100	35
Municipal	4,200	1,800	43
Total	13,100	4,900	37
Mental (females only)	6,800	5,600	82
Infectious diseases	1,800	1,000	56
Tuberculosis sanatoria	1,400	900	65
Total	23,100	12,400	54

Analysing the intake and loss of training nurses, the Working Party found that (1) the number entering first employment in hospital each year is probably between 9,500 and 10,000; (2) about 6,300 trained nurses each year transfer to hospitals from nursing employment in other hospitals or elsewhere; (3) an average of 5,600 trained nurses in the hospital field leave the profession each year, and about 3,000 from the public health and other fields; (4) more than one-third of the loss from hospitals is due to marriage, and sickness accounts for 9% of the loss from general hospitals and 5–15% from other hospitals. The report adds that the annual replacement rate of trained nurses must be at least 9,000 a year before the profession can expand.

Causes of Wastage

The Working Party interviewed a number of students who had abandoned their vocation, and came to the conclusion that the difference in attitude between a nurse who gives up training and one who continues it is a difference in degree, not in kind. "Under the present system a point is reached during the training period when students 'waste,'" and it appeared from these interviews that the crux of the whole problem of wastage lies in the sphere of human relationships.

The provisional hypothesis is formulated that the chief causes of wastage fall into two groups: (1) The attitude of the senior staff and their alleged lack of sympathy and understanding, leading to a cramping and over-disciplined existence, and (2) dissatisfaction with food, accommodation, hours of work, lack of privacy, etc. The Report adds that "any impartial investigator entering many nurse training schools encounters an atmosphere of dissatisfaction or even discontent"; and again, "the conclusion emerges clearly . . . that the type of discipline which pervades the training schools to-day is unquestionably the most important cause of wastage." The Working Party concludes that nurses in training must be regarded as students and not as junior employees subject to an outworn system of discipline. The amenities of life must be improved, and the training day must be reduced in span to conform as closely as practicable to a normal working day, which would necessitate

[1] *Report of the Working Party on the Recruitment and Training of Nurses.* (H.M.S.O., 2s. 6d.)

a three-shift system. It further advocates proper methods of selection for student nurses and for nurses appointed to senior posts.

Training of Nurses

The training of nurses varies greatly from school to school in length and efficiency. In studying the work of 36 student nurses the Working Party's investigators "came across no instance of any formal clinical teaching in the wards." The period of training at present is in most cases three years, but it varies from four years in affiliated (and some complete) training schools to two years if the nurse is already on one of the supplementary registers. In many cases new courses in training have been added which partly duplicate the contents of courses already taken by the student. Furthermore, in many courses of training a great deal of time is wasted in the repetition necessitated by the requirements of ward work. The same strictures apply to "special" as well as general training, the only exception being in maternity nursing.

The Report outlines a new scheme for training nurses in two years with an examination after 18 months and a final examination six months later, when the successful student would qualify as a State Registered Nurse, with the title S.R.N. and the pay and status of a qualified nurse. She would be employed, however, only under supervision until she had completed a further year's work. She would then be permitted to engage in private practice.

The actual course of training is divided up as follows: introductory course, 12 weeks; paediatrics, 9 weeks; obstetrics, 4 weeks; communicable diseases (including tuberculosis), 4 weeks; medicine, 10 weeks; surgery, 13 weeks; gynaecology, 4 weeks; public health, 5 weeks; and psychiatry, 8 weeks. Having passed an examination at the end of this time the student would then do 23 weeks' training in a selected branch of nursing. Twelve weeks is allowed for vacations in the two years. This scheme gives students the opportunity of learning to nurse infants and children before adults, which the Working Party considers desirable, since adults display something of the helplessness of children, and a nurse who has handled children will approach the adult with more confidence. It also provides a basic training in public health, at present much neglected, as well as an introduction to psychiatric nursing.

Those wishing to specialize in midwifery might do six months' training in the optional period, which, with the four weeks' training in the first 18 months should broadly cover the present syllabus for Part I Midwifery, while the year of work under supervision after qualifying would correspond to experience obtained in Part II of the midwifery course.

An important point is that the cost of training should be separate from the maintenance expenditure of the hospital. While student nurses should receive free board and lodging as well as training grants, the Working Party found that in a sample of ex-students examined by them about one-third were unfitted for nursing owing to instability or unsuitability of temperament, but they suggest this figure may have been unduly high owing to war conditions and that possibly a quarter of the intake should be regarded as unfit—about half for temperamental and half for intellectual reasons.

The Report therefore outlines a selection procedure to replace the existing tests and interviews. It is based on that employed in the Women's Auxiliary Services and comprises (1) an interview by the personnel selection officer; (2) a questionary designed to discover the candidate's interests, stability, and personality; (3) a questionary dealing with occupational preferences, "self-knowledge," and health; (4) standardized intelligence tests; and, if necessary, (5) tests of scholastic attainments.

Organization of Training

The training envisaged in the Report is beyond the scope of any one of the schools now approved for general training. It is therefore proposed to group hospitals into nursing training units, which would be organized within the Hospital Regions. Each unit would be under the charge of a director and his staff. A necessary requisite in the selection of sisters to teach in these units would be an aptitude for teaching. The Working Party hopes that every Hospital Region will set up at least one training unit as soon as possible. Each training unit would have its education committee comprising representatives of the teaching staff, hospital matrons, and governing bodies of the institutions and health agencies forming the unit. The Regional Nurse Training Board would be required to co-ordinate the work of the various units in the region. Its members would include representatives of the Regional Hospital Board, board of governors, hospital management committees, local health authorities, and the nurse education committees of the training units. Headquarters research units should be set up at the Ministry of Health and at the Department of Health for Scotland to undertake research into training, and particular problems might be studied in experimental training centres.

The Report is critical of the constitution of the General Nursing Councils and in particular the manner of their election. Members, apart from Government representatives, are often quite unknown to those who elected them. Elections should be by Hospital Regions. The Report also advocates the amalgamation of the General Nursing Councils and possibly their unification with the Central Midwives Boards. The Working Party did not specifically examine the status of assistant nurses, but they believe that there is room, in addition to State Registered Nurses, for nursing orderlies who would be concerned with the simpler and more routine duties that do not require a full training in nursing. The training of such nursing orderlies requires further investigation.

We may quote finally an important observation on the recruitment of nurses: "It appears to us that the recruitment of candidates for nursing is a secondary task: the primary task is to remove the deterrents to recruitment, which are much the same as the causes of training wastage."

CHANGES IN FOOD CONSUMPTION

Our first leading article this week (p. 422) discusses the probable effects of the present and possible future cuts in rations. Some of the changes in the consumption of various kinds of food over the last eight years are indicated in the most general terms in a White Paper[1] issued on Sept. 2 and entitled "Food Consumption Levels in the United Kingdom."

The White Paper, in the following table, shows the percentage of total calorie intake derived from certain groups of foods:

	Pre-war	1945	1946	July/June, 1946–7 (provisional)
Dairy products (excluding butter)	9	11	11	11
Meat (including canned meat and bacon)	17	13	14	14
Oils and fats (including butter)	17	14	14	13
Sugar and syrups	15	11	12	13
Potatoes	4	7	7	7
Grain products	30	37	35	34
All other foods	8	7	7	8
Total	100	100	100	100

The level of consumption of dairy products, excluding butter, reached its highest point in 1943, when it was 31% above pre-war. It is now at 30% above, as it was in 1945. Of the individual foods within the group, liquid milk consumption has increased progressively since 1939 and now stands at 44% above pre-war. Cheese consumption has declined almost continuously since 1942, when it reached a peak of 59% above the pre-war level. It is now rather less than in 1945, but is still above pre-war.

There have been important changes in the consumption of the different types of meat. The group which includes bacon and canned meat reached its lowest point in 1941, but has now recovered to only 9% below pre-war levels calculated on carcass weight equivalent, or 15% below pre-war calculated on edible weight. This relatively small reduction results from the substitution of boneless beef and canned meat for the other more attractive types. The consumption of mutton and lamb is not very different (10% above), but beef with bone is 40% below, bacon and ham 52% below, and pork 83% below pre-war. On the other hand, the consumption of boneless meat is 6½ times, canned corned meat 4½ times, and other canned meat more than 10 times the pre-war levels.

[1] Cmd. 7203, H.M.S.O., 6d.

There was a big increase in 1946 and 1946–7 in the consumption of fresh, frozen, and cured fish. With the reopening of the fishing grounds and resumption of trawling, consumption has increased to 28% above the pre-war level.

Eggs and Fats

The part played by dried egg in the national dietary is interesting. While the consumption of shell eggs is still 44% less than before the war, total egg consumption, including the shell egg equivalent of dried and liquid egg, is only 14% below.

The consumption of "visible" fats has fallen to 26% below the pre-war level. Butter has dropped by 56%, lard and compound cooking fats by 22%, and other edible oils and fats by 44%. Margarine consumption, on the other hand, is now 70% above pre-war.

Though still 26% less than before the war, the consumption of sugar and syrups has risen above the wartime levels.

Fruit and tomatoes reached their lowest consumption level in 1941 (58% below pre-war), but then recovered to about 35% below in 1944 and 1945. The position improved to 17% below pre-war in 1946–7. Except for the years 1940 and 1941, the consumption of vegetables has been consistently above the pre-war level.

Since the beginning of the war potatoes have been used to make good in part the loss of calories resulting from reduced supplies of other foods. Consumption reached 60% above pre-war in 1944, declined slightly in 1945, but has since increased again to reach a new high level (66–67% above pre-war).

Bread and flour also provided a "buffer" against reduction in other food supplies. Flour consumption reached a peak of 24% above pre-war in 1945, but has now fallen to 12% above.

Tea consumption is now only 4% below pre-war, while that of coffee is well over twice the pre-war level.

Another table "Food supplies per head per annum moving into civilian consumption in the United Kingdom" includes the following:

	As Percentage of Pre-war			
	1940	1943	1946	1946–7 (provisional)
Dairy products (excluding butter) (total as milk solids)	100	131	129	130
Meat (including canned meat, bacon and and ham):				
(As carcass weight)	89	80	86	91
(As edible weight)	90	79	82	85
Fish, poultry and game (edible weights)	69	66	105	109
Egg and egg products (fresh egg equivalent)	92	90	87	86
Oils and fats (visible) (fat content)	92	85	77	74
Sugar and syrups (sugar content)	71	65	72	74
Potatoes	98	144	167	166
Pulses and nuts	72	63	70	82
Tomatoes and citrus fruit (fresh equivalent)	69	41	70	84
Other fruit (fresh equivalent)	80	62	77	82
Leafy, green and yellow vegetables	104	119	115	107
Other vegetables	68	90	95	109
Grain products	108	118	112	110
Beverages	106	78	107	110

This shows the same changes in a different form, and easily the most significant decline over the period is that shown by "Oils and Fats (visible)."

The Report of the British Legion Village for the year 1945–6 has recently been issued. The "Village" consists of three institutions—the sanatorium and settlement at Preston Hall, near Maidstone, the convalescent seaside annexe (Douglas House) at Bournemouth, and the sanatorium for women at Nayland, near Colchester. The Medical Director points out that considerable progress has been made in laying the foundations of a long-term policy which "has been based on the principle of viewing the patient's disability in the light of his life history, his achievements, and his future plans and ambitions, realizing that the treatment of the local lesions in the lungs is but an episode in the much longer task of fitting a man to take his place again as a good citizen. . . ." Courses of training assist patients to become proficient in clerical work, nursing, carpentry, printing, transport work, engineering, painting, estate maintenance, and the manufacture of fancy goods. It is hoped that selected patients will be able to work under normal industrial conditions.

BRITISH ASSOCIATION

MEDICINE AND SCIENCE

The general theme of the first full post-war meeting of the British Association, held at Dundee from Aug. 7 to Sept. 3, was described in the programme, and in Sir Henry Dale's presidential address, as "Swords into Ploughshares." Some of the points made by Sir Henry Dale were summarized in a recent annotation (Aug. 30, p. 340). This was a title which, as pointed out in advance, could be taken in many ways. As interpreted both in the planning of the programme and in the resulting discussions and addresses, it referred primarily to the absorption of the new knowledge which has resulted, directly or indirectly, from wartime research; to the use and development of techniques which had originated from wartime requirements for research and practical applications in peace; and last, but not perhaps of least significance, to the problems of resettlement and realignment of effort which affect the man of science. To this might be added an undercurrent of disagreement—which in a discussion on operational research reached the surface—as to the special contribution, if any, which science and scientists could make under present conditions. On this last point the Council of the British Association has called for suggestions from the scientific sections.

The more important discussions affecting medicine followed the general lines already indicated, and brought out once again the value of meetings attended by representatives of more than one branch of science. Physiologists and psychologists joined in a discussion on "Man and the Machine," to which Prof. W. E. Le Gros Clark made a notable contribution. In parenthesis, this must be the first occasion when an anatomist has spoken at the same meeting, and from personal work, both on the design of machinery and on the mutual relationships and evolution of fossil *Hominidae*. The former, like the later discussion on aviation physiology, introduced by Air Marshal Sir Harold Whittingham, was the direct result of wartime experience, and illustrated also the academic benefit which may result from an enforced introduction to practical requirements. Two other joint meetings of medical interest were on antibiotics and tracer elements. In the case of antibiotics it might have been thought that the full and recent attention which has been given to this subject at the International Congress of Pure and Applied Chemistry might have rendered further attention unprofitable. Once again, however, the meeting of many interests proved of value. Dr. E. Chain, who shared the Nobel Prize for work on penicillin, attacked the wider question of the significance of the biological activity of particular chemical groupings, and notably in the case of Gramicidin-S of the combination in a particular order and physical shape of a sequence of substances which individually are standard components of biochemical architecture, but together have a marked and specific activity characteristic of the whole rather than the parts. Similarly, it was no less valuable to be reminded by Dr. J. Ramsbottom that the part played by antibiotics in nature raises its own problems of biological interest.

The Anatomist and the Machine

In the discussion on man and the machine, Prof. Le Gros Clark stated that during the recent war anatomical problems had assumed an importance in operational research which had not previously been fully recognized. The problems were not essentially new, but they were accentuated by the realization that the efficiency of machines depending on human control was limited by the capabilities of the man who operated them. In a sense, the greater the accuracy of the machine, the greater was the need to ensure the accuracy of the human element, and in order to make the fullest use of the extreme degree of precision of which the machines were capable the operator must work at his greatest mechanical advantage. Whereas before there had been a tendency to ignore the operator in design, leaving him to fit himself into the completed machine as best he could, anatomical considerations were now projected into design from the beginning.

Investigations could be broadly divided into work on static posture and dynamic posture, the former being exemplified by the design of seats. The seat must be designed with adjus

ments which would allow it to support individuals of different body dimensions in a good average position. This position should require the minimum of effort for its maintenance and should allow the operator to stabilize himself against extrinsic forces to which he might be subjected in his work. These studies had involved extensive anthropometric surveys, with special reference to the degree of correlation between different body dimensions, and the possibility of combined adjustments to the seat. It had been found at Oxford that methods using films were not only quicker than physical measurements, and equally satisfactory as regards accuracy, but also enabled measurements to be made of kinds which could not otherwise be readily duplicated.

The second branch of research into muscular activity included a study of the natural sequence of muscle action and joint movement in the performance of specific tasks, and particularly in any composite movement. Hitherto, he confessed, anatomists had tended to study the movements of joints in isolation, often on the cadaver, and their results were not readily applicable to practical problems. It seemed now that the composite movement should be studied first, and only secondarily the part played by the individual units in a joint. Again film methods had been found useful, this time in the preliminary analysis of the sequence of movement. As an example, Prof. Le Gros Clark instanced the complex neck and head movements involved in following the path of an aircraft by means of sighting equipment. The problem was to design a system of pivoting which would preserve and not constrain this natural sequence. Certain agricultural implements for specific tasks, he added, were now being redesigned at Oxford on anatomical and physiological grounds. He also expressed the hope that the "shaped" or "ploughman's" seat might be altogether abolished.

Aviation Physiology

Air Marshal Sir Harold Whittingham began his survey of applied physiology in relation to aviation by recalling that a period of neglect had followed the end of the first world war, and that research on the problems of aviation medicine did not reawaken in Britain until 1935, when the problems of glare, night vision, colour vision, ocular muscle imbalance, and of the design of goggles and helmets received particular attention at the R.A.F. Central Medical Establishment. It was not until the beginning of 1939, however, that the Air Ministry Flying Personnel Research Committee was set up, under the chairmanship of Sir Edward Mellanby, and research was intensified. Although a certain amount of fundamental research was begun during the following eight months, much subsequent investigation was necessarily of an *ad hoc* nature.

As an example of this type of research, he described the studies of oxygen lack, in relation to parachute jumps from high altitudes, which had been made by E. A. Pask, W. K. Stewart, and S. L. Cowan, to determine the length of time which an average man could live, although unconscious, while descending from 44,000 to 25,000 feet. "Volunteers," he stated, "were suspended in the air by means of the standard harness and made to breathe nitrogen–air mixtures to simulate the atmospheric conditions from 44,000 feet downwards at the rate of descent of an open standard parachute. It was found that a man could remain unconscious for 7½ minutes without additional oxygen." Another problem, which had arisen through contacts with resistance groups in enemy-occupied territory, was that of picking up a human being from the ground by an aircraft in flight. This involved acceleration from rest to about 120 m.p.h. within half a second. Squadron-Leader Stewart had taken part personally both in this research and in later investigations on the safe ejection of pilots from jet-propelled aircraft.

Squadron-Leader W. K. Stewart, himself, apart from aircraft experiments, listed man-carrying centrifuges, swings, pendulums or verticle accelerators, and inclined plane test rigs up to 115 feet in height as among the laboratory devices which had been used. Specific factors found to be of importance included the total energy imparted to the body, the maximum value and duration of acceleration or deceleration, the rate of application, the body area through which the force was applied, the anatomical characteristics of the body in relation to its orientation, and the occurrence of secondary physiological effects. Dr. C. F. Code spoke on behalf of a group of United States workers who had also undertaken personal experiments, resulting in one case in loss of life.

Climate and Efficiency

In a discussion on climate and health Dr. N. H. Mackworth described how sailors had volunteered to work in a hot room at the Psychological Laboratory, Cambridge, to provide practical tests of the effects of heat on working efficiency. The investigation was carried out by the Medical Research Council for the Royal Navy, but, the speaker pointed out, had also civilian applications. The main finding was that even powerful incentives failed to prevent falling off in the amount of work done. Loss of accuracy was also noted in muscular co-ordination and in the writing of morse code messages. The men were also less accurate at look-out duties and in carrying out instructions for mental work. Tests of a similar character, designed for the direct measurement of human performance, were soon to be carried out, Dr. Mackworth stated, at a research unit in the Far East. It was hoped that the results would help to alleviate both civilian and Service life in tropical regions by indicating where air-conditioning was most needed.

Operational Research

In the controversial discussion on operational research medicine was represented by Prof. F. A. E. Crew and Prof. W. C. Wilson. After describing the initial arrangements, whereby it had been intended that the Army Council would refer to the Medical Research Council any problem of urgency and importance which fell within the sphere of biological science, Prof. Crew stated that Sir Edward Mellanby had ultimately created his own organization for field investigations. One of the prototypes was that commanded by Prof. (then Lieut.-Col.) Wilson, who spoke next. After describing the work of his own unit in the Middle East—which included such varied investigations as the medical problems of tank units, wound shock, and the frequency of burns from "the deadly desert stove"—he referred to the shortage of trained investigators in the medical sciences. "For the progress of medicine," he stated, "it is important that the supply should be increased. I am not so optimistic as some that the shortage can be easily or quickly remedied. Most gifted research workers naturally turn to the basic sciences and only a minority to clinical subjects; and of these some are lost to research because they soon become fully occupied with clinical practice and teaching." At the present time, he added, readjustments after wartime service and the acquisition of specialist diplomas were increasing the difficulty; but many young and keen medical officers were found during the war, and he had no doubt that ultimately the requirements of experimental medicine or clinical science would be met. "If the latent forces of interest and idealism in the medical profession could be mobilized," he summed up, "they might provide a research weapon of immense power for use in some new fields, such as social medicine. But I am sure that voluntary co-operation must be sought; anything in the nature of compulsion or Government regulation would defeat its own ends."

Other Discussions

In a joint discussion on insecticides, held by the sections of chemistry, zoology, and agriculture, Prof. J. M. Munro described the place of insecticides in food protection. One of the special problems raised by fumigation, he stated, was to secure the effective distribution of the fumigant. Apart from failure to kill the insects in certain areas, faulty distribution could also result in an unduly high residue being left in the commodity, which might seriously taint it or cause it to be unfit for consumption. Both Dr. J. L. Simonsen, in his presidential address to the section of chemistry, and Dr. E. Hindle, in his presidential address to the zoologists, had earlier emphasized the large scale of foodstuff destruction during storage, particularly in the Tropics. Dr. Hindle quoted an average loss of 10% of all food production as "conservative" for the Commonwealth as a whole, and Dr. Simonsen estimated the loss in East Africa at 30%.

A discussion on atomic energy by the section of physics brought little new information of importance; but a joint session by the chemists and physiologists on the research uses

of tracer elements was notable for a considered survey by Dr. A. S. McFarlane, of the National Institute for Medical Research, on biochemical applications. This gave the impression, possibly for the first time, that tracer methods could now be considered not as so many individual examples of a new technique but as part of the general progress of biochemistry as a whole.

Finally, the anthropologists gave a reminder that man's primitive past is not either so deeply buried or so exclusively Freudian as some might suppose. After discussing the views on magic and religion expressed by Sir James Frazer, Prof. F. B. Jevons, and Emille Durkheim, Prof. J. Murphy suggested that the attempt made in each of these theories to make a fundamental distinction between primitive magic and primitive religion must be judged to have failed. "There is a 'generalized' type of primitive thought," he stated, "from which religion, magic, and, it may be added, science have been differentiated." In the same section Prof. E. O. James made the point, which is perhaps not without significance in civilized as in primitive society, that "ritual is more stable than myth and subject to constant reinterpretation and revaluation as occasion requires and thought demands."

INTERNATIONAL CONFERENCE OF PHYSICIANS

FIRST POST-WAR ASSEMBLY IN LONDON

The International Conference of Physicians was held in London from Sept. 8 to 13 under the presidency of Lord Moran. The large and representative gathering included visitors from the United States, from Australia and other Dominions and Colonies. and from twelve European countries. The British Council invited 25 oversea speakers, and of the 120 papers on the programme fully one-third were contributed from abroad. After an informal reception at the Royal College of Physicians the Conference split up into the following eight sections under their respective presidents: general medicine—Lord Moran; cardiology—Sir Maurice Cassidy; disorders of chest—Sir Robert A. Young; dermatology—Sir Archibald Gray; neurology—Dr. Gordon M. Holmes; paediatrics—Sir Leonard Parsons; psychiatry—Dr. Bernard Hart; and social medicine—Sir Wilson Jameson.

The subjects of the general discussions included infective hepatitis; pain; vitamin D in the treatment of cutaneous tuberculosis; malnutrition and the nervous system; surgery of congenital heart disease; pulmonary heart failure; the role of the pyramidal system in movement; B.C.G. vaccination; sarcoidosis; scabies and tuberculosis; social medicine in the curriculum; and the care of the aged and infirm. The Sections of Dermatology and of Paediatrics held clinical meetings. Social events included a dinner at Guildhall, a Government lunch over which the Minister of Health presided, and various visits and private entertainments. The Conference concluded with visits to Oxford and Cambridge.

Penicillin

At the opening session, held at the Royal Institution, Sir Alexander Fleming discussed some aspects of penicillin. Defining an antibiotic as a substance produced by the living body in its normal growth which had the special property of exercising a destructive or inhibitory effect on micro-organisms, he said that penicillin was the first of the antibiotics to achieve any remarkable success, and it had set a standard which had not been reached yet by any other substance. He described his early work and showed a photograph of his first culture plate (the culture plate itself is in the Science Museum), and went on to speak of the bacteriostatic action, diffusibility, and non-toxicity of penicillin. Purification and concentration of penicillin had now been achieved, and as compared with the early samples it had been improved out of all knowledge. He paid a tribute to the Government departments, industrialists, and scientists who had worked together to such effect that when D-day came there was enough penicillin for every wounded man. He looked forward to means being found to prevent the rapid excretion of penicillin, which would be far better than merely to delay absorption.

Dr. E. Chain followed with an account of some biochemical aspects of penicillin, and mentioned in particular the efforts made to achieve a complete synthesis. It was interesting to reflect how so small a molecule had defeated the combined efforts of British and American chemists.

Dr. R. V. Christie spoke of penicillin in subacute infective endocarditis—a condition which illustrated perhaps better than any other to what extent penicillin had altered the outlook not only on treatment but on the clinical course of disease. His remarks were based on the treatment of 269 patients in 14 centres appointed by the Medical Research Council. The period of follow-up had been at least one year, and much longer in many cases. When this investigation was first planned only one case of recovery with the use of penicillin alone had been recorded. Experiment showed that the duration of treatment was of greater importance than the total amount given; this was tested by giving 5,000,000 units of penicillin in courses of five, ten, and twenty days, and noting the relapse rate. If a patient had a relapse after one course of treatment he was very much less likely to respond to a second course. This might mean, of course, that the organism had acquired some resistance during the earlier administrations, or it might mean that the patient belonged to a selected group of naturally resistant individuals. Whatever the explanation, the patient who relapsed should receive very much larger doses over a longer period. It was now their custom to give at least 2,000,000 units a day over a period of eight weeks. No matter how sensitive the organism might prove to be, it was no excuse for reducing the dose. Foci of infection, particularly in the teeth, should be removed, and with such precautions infection could be controlled in about 95% of patients, but 30 to 40% of these would die later from various complications, most frequently from heart failure. The cause of death was heart failure alone in 40%, heart failure with some superadded cause in 16%, uraemia in 6%, emboli in 11%, haemorrhage in 8%, and mixed or uncertain causes in 19%. These complications were clearly a greater hazard than risk of failure to respond to penicillin, and it was clinically important as well as of academic interest to be able to estimate this hazard at the start of treatment.

Streptomycin and Other Antibiotics

This subject was introduced by Dr. P. D'Arcy Hart. Some of these antibiotics, he said, had a very limited function and could be considered as no more than potentially useful. Streptomycin, however, was the most important next to penicillin, and could be used systemically. Some reactions thought to be due to streptomycin had turned out to be due to the disease itself, for example, mental changes in tuberculous meningitis; but there were cases in which the substance had a histamine-like or allergic action, due, possibly, to impurities, the action varying even with preparations of the same potency. These reactions were rashes, headache, joint pains, and other symptoms. In addition there was something inherent in the substance, causing in some cases vestibular disturbances and partial deafness. This tended to occur more frequently with heavier doses from two to three weeks after beginning treatment, and so was more likely in tuberculosis than in non-tuberculous conditions. Toxic symptoms such as giddiness, though they had appeared quite frequently in the present M.R.C. trials, did not call for complete cessation of treatment in any case.

The new antibiotics were affected adversely by an acid *p*H. With penicillin it was the reverse, an acid *p*H enhanced activity. In an acid environment such as pus, streptomycin, unlike penicillin, might be expected to have a less efficient action than in a neutral *p*H, and this might partly explain the unsatisfactory results following treatment with streptomycin in cases of tuberculous empyema. The active or progressive tuberculous focus without caseation was susceptible to the action of streptomycin, the *p*H being probably nearer neutrality. Another difficulty with streptomycin was acquired drug resistance, due perhaps to the presence before treatment started of a proportion of resistant bacteria in an otherwise sensitive bacterial

population. He described an experiment on mice in which sulphetrone had been combined with streptomycin; the successful result was not due to cumulative but to synergic action.

Finally, Dr. I. A. B. Cathie described the application of streptomycin in tuberculous meningitis and miliary tuberculosis at the Hospital for Sick Children. The relapse rate was so high that a longer follow-up than had yet been possible was required, and therefore, he said, his remarks were in no sense a report on these cases. Twenty cases had been treated, all under the age of 7. Administration had been intramuscular and intrathecal, both attended by a certain amount of pain. He and his colleagues were leaning more to intramuscular administration alone, and reactions were fewer with the newer batches of streptomycin. The blood sedimentation rate nearly always fell in the initial stages of treatment with streptomycin, and rose again as the case failed to respond and death approached, in contrast to the usual course of events. No renal changes were observed and no alteration in the blood count. He believed that streptomycin provided something in the treatment of tuberculosis which had not existed before. If not a life-saver it was a life-prolonger. In meningitis the results had been disappointing; in miliary cases they had been encouraging, and so far there had been no deaths and the clinical and radiological improvement had been striking. How long administration should be continued was still not known, nor was it yet determined what was the best route and whether administration should be continuous or intermittent.

A report on the later sessions of the conference will appear next week.

Reports of Societies

SOCIETY OF MEDICAL OFFICERS OF HEALTH

The County Borough Group of the Society of Medical Officers of Health held its Annual Meeting from July 18 to 21 at York, under the presidency of Dr. W. S. WALTON, G.M. Dr. A. B. WILLIAMSON (Portsmouth) was elected president of the Group for the coming year, and Dr. J. GREENWOOD WILSON (Cardiff) was re-elected secretary. To mark the centenary of the appointment of the first medical officer of health, the customary inaugural dinner on the first evening was made more formal than usual with a "top table" which included His Grace the Archbishop of York, Sir Wilson Jameson, Sir Allen Daley, Dr. W. W. A. Kelly, chairman of the York Health Committee, and Dr. Peter Macdonald.

Social Medicine

Among the addresses given at the Conference was one by Prof. J. C. SPENCE on "The Conduct of Investigations in the Field of Medicine and Social Medicine." He emphasized the importance of these investigations and suggested that when the new National Health Service was fully in operation the medical officer of health should have more time and opportunity to carry them out. Having outlined the essential qualities that seemed to be common to all successful research workers, Prof. Spence urged that the medical officer of health should be inspired by the conception that he was the real community doctor and should be medical adviser in any field whatsoever—hospitals, education, housing, and even roads. The question must always be asked, Is this for the welfare of the citizen? The medical officer was responsible for finding the answer. To provide that answer he should be prepared to organize, even if he did not carry them out himself, the necessary and relevant social surveys or sociological research.

Dr. CYRIL BANKS (Nottingham) opened a full and long discussion on the operation of the National Health Service Act, 1946. This session was wound up by replies from Sir WILSON JAMESON and his deputy, Dr. J. A. CHARLES. Dr. ANDREW TOPPING (late deputy director-general, U.N.R.R.A.) gave an account of the work of that organization and Dr. ARTHUR MASSEY explained his ideas as to the work of the new medical service which he is organizing for the Ministry of National Insurance.

Correspondence

Medicine in the United States

SIR,—I trust this belated correspondence will be excused, but I have but recently read the remarks of Drs. Connolly (July 19, p. 108), Tanner (Aug. 2, p. 189), Sutton (June 28, p. 948), and Simpson (June 28, p. 949) in your *Journal* and must say that I find their comments on medical education, particularly in America, of the greatest interest. It was my very good fortune to study in Boston, and the clinical-pathological conference, colloquially reduced to C.P.C. in student parlance, was a feature of the clinical—i.e., the third and fourth years—of our medical curriculum. In fact it was with some amazement that I learned that it was not commonly held in all American teaching centres, although you must not take me for an authority on this. However, the gentlemen who wrote did not precisely describe this significant feature of medical education in this country, and, having witnessed many in Boston, where, I believe, the practice was originated by Dr. Richard C. Cabot at the Massachusetts General Hospital, I take the liberty of describing those in which I participated.

As you know, there are several medical schools in Boston, and Harvard and my own school, that at Boston University, habitually alternated in selecting from their remotest and best-hidden records some case which had been carefully studied on the wards and which subsequently came to necropsy. A suitable abstract of this case would be mimeographed and made available at either medical school and at other depots in Boston, particularly through the Massachusetts Memorial Hospitals, the Massachusetts General Hospital, and the Boston City Hospital. This would take place about a week in advance of the appointed date, and at that point perhaps 300 and even 500 students, interns, residents, visitors, faculty members, etc., would gather in either of the large auditoriums at the Boston City Hospital which are fitted for projection of slides, etc.

Students are required to make primary and secondary diagnoses in writing and to hand them in to a junior faculty member. The exercises open with the introduction of the man, usually a distinguished member of the *other* faculty, though this is not always true, and he, using only the facts allowed the students, with perhaps an occasional question legitimized by a misprint in the copy or which is outside his particular field, proceeds to analyse the case and to make a diagnosis.

Then the students' diagnoses, which have been tabulated, are read as so many for this disease, so many for that, and there is frequently much laughter as some particularly exotic malady is mentioned or a medical malapropism employed. There is then a question period and the pathologist, who always is right, since he *saw*, reads the necropsy protocol and shows pictures, frequently in colour, of the actual case itself.

Lest this sound dull, be assured that it is not. It would burden your patience, gentlemen, to go into detail, but brilliant diagnoses have been hazarded by distinguished gentlemen who would have been much embarrassed if their opinions were not substantiated, so far out on a limb had they hung their verdicts. There have even been occasions for applause when only the central figure or perhaps a student was the only one among many to be found correct. (Those who have access to the *New England Journal of Medicine* may read the Cabot C.P.C. each week.)

May I add that I feel it most important for American and English medical personnel to be in the most intimate contact with each other? I should have written directly to Messrs. Connolly and Sutton, but their addresses, of which one example was Ely, Cambs, completely defeated me. Your courtesy has been much appreciated and your *Journal* is much valued.—I am, etc.,

New York. HAROLD RAOUL WAINERDI.

Poliomyelitis

SIR,—Dr. Muriel B. O'Doherty raises (Aug. 30, p. 325) an interesting point in her letter in connexion with the transmission of the poliomyelitis virus through soft fruit. A few years ago strawberries were incriminated at Braintree, as far as I can remember, but I have no literature to hand. The present epidemic coincides with the appearance in shops and on coster barrows of a welter of pears, peaches, plums, pineapples, dates, and cherries, many of them overblown. This fruit has been

welcomed by those able to afford it, but with present living conditions I do not think much of it has been peeled or washed before consumption.

Many of these fruits were picked and packed in countries where the British population would not dream of eating them without previous washing in a weak solution of some oxidizing agent. It is known that the virus of poliomyelitis is easily destroyed by oxidizing agents (Jos. Stokes, jun., in *Textbook of Pediatrics* (edit. W. E. Nelson), Philadelphia, 1946, p. 479). I feel that a more vigorous campaign among the public, including those serving meals and uncooked food, for more care in handling and in washing up all utensils is called for urgently.—I am, etc.,

Winchester. MYRTLE M. HUTCHINS.

SIR,—In an article on acute poliomyelitis by Dr. W. H. Kelleher (Aug. 23, p. 291) the opinion of American observers is quoted that "perhaps 98% of poliomyelitis is a mild, widespread, highly communicable disease, mainly of young children, leaving no residual paralysis . . ." This opinion is valid for the present outbreak of the disease in this country, and the presence of the specific virus is not the only factor necessary for producing the disease in a clinically recognizable form.

It is very important to discover what it is that has been added to the virus in 2% of people to produce serious disease of the nervous system. To solve this problem a study of clinical and environmental factors must be made of the patients and their known contacts, using the knowledge of the virus as an indicator of the people at risk.

Recent outbreaks of smallpox, enteric fever, and of other acute diseases, as well as chronic infections such as tuberculosis and chronic pyogenic disease, show how large is the unknown factor in the equation : specific organism plus *x* equals disease. A revival of epidemiology is needed, with knowledge of bacteria and viruses as an aid instead of the insufficient substitute which it has been for many years. Clinicians must take a bold part in this revival.—I am, etc.,

London, W.1. J. M. ALSTON.

Leprosy and its Problems

SIR,—Dr. B. Moiser's "new theory" of the spread of leprosy (Aug. 30, p. 347) is based on a number of assumptions for which he adduces no supporting evidence. That cockroaches evacuate large numbers of acid-fast bacilli after feeding on leprous material was shown years ago by MacFie. This work was confirmed and amplified by Lamborn, in Nyasaland, in the course of observations extending over several years. It is interesting to know that Moiser has repeated some of these earlier observations—to which, however, he makes no reference.

Lamborn's observations led him to believe that the bacilli multiplied in the cockroach and that human infection may result from contamination of food by the faeces of the cockroach. Postulating a "characteristic" lesion following cockroach bites—which he has never witnessed—Dr. Moiser advances a theory that the bacillus is inoculated in the act of biting. I submit that much more substantial evidence is required of Dr. Moiser before his new theory merits serious consideration.—I am, etc.,

Bournemouth. J. B. DAVEY.

SIR,—Your issue of July 12 has just reached me, and under the heading "Leprosy and its Problems" (p. 73) Dr. E. Muir has a letter. In it he takes to task the writer of the leading article on the same subject in the issue of June 7 for "two rather serious mistakes."

Dr. Muir considers the first of these serious mistakes the opinion of the writer that "nodular leprosy may possibly prove intractable." I have lately received a letter from a friend holding an important position in the Department of Leprosy in Sao Paulo, Brazil, from which I should like to submit an excerpt on the subject. Dr. Muir will agree with me that the visitors to the Pan-American Conference on Leprosy, held at Rio de Janeiro in October last year, were astonished and very favourably impressed with the standard of work carried out in that country, and particularly in the State of Sao Paulo. They have been using the sulphones since early in the history of this treatment, and the letter reads :

"About promin, according to the experiments done here (not by myself), my impression is the following: (1) Good results in the lesions located in the mucosa, especially in the larynx, in cases which formerly would have required tracheotomy. (2) Good results in the skin lesions of some patients. I have the impression that promin has to be used chiefly in uncharacteristic or simple inflammatory cases (neuromacular of the Cairo Classification), with negative lepromin test, to avoid their evolution to the lepromatous type. If we can stop this evolution we shall have already done a great thing to the patient and to the prophylaxis."

Speaking from my own experience with "promin" and "diasone" since January, 1945, I heartily endorse the statement that nodular leprosy may possibly prove intractable. We may have made some progress by the use of the sulphones. In my opinion, any judgment of their value is still in the impression stage. One has only to look at the swing in opinion of the value of the chaulmoogra derivatives which has been taking place for some years among a considerable number of leprologists to appreciate how difficult it is to arrive at an accurate and permanent judgment on the value of any treatment in leprosy. I am convinced that we are still looking for a real cure for this disease.—I am, etc.,

Trinidad. GEORGE CAMPBELL.

"Mushroom" Poisoning

SIR,—Since "mushroom" poisoning happens chiefly to the collector of mushrooms, the rule should not be, "Do not eat any fungus which is not obviously a mushroom," but should be, "Buy your mushrooms, and collect only edible fungi which have no resemblance to any of the poisonous ones." Such fungi are (1) the puff-ball (small and giant), (2) the amethyst agaric and blue leg blewit (*Tricholoma nudum* and *T. personatum*), (3) the morel, (4) the girolle (*Cantharellus cibarius*), (5) the oyster mushroom, (6) the shaggy cap (*Coprinus comatus*), (7) the beef-steak fungus, (8) *Sparassis crispa*, (9) the horn of plenty, (10) the cep—if the amateur avoids the highly coloured ones. I have left out the parasol mushrooms because the amanitas bear some resemblance to them.

The amateur who will collect mushrooms should be careful to avoid the yellow staining mushroom (*Psalliota xanthoderma*) —very like a small horse mushroom except for yellow stains on it, more apparent when bruised. In some people it can produce unpleasant though not dangerous symptoms, as I know from personal deliberate experiments with it. The mycophagist is apt to become an enthusiast in experiment, and having learnt the known poisonous fungi can indulge his appetite with reasonable safety if he eats at first very sparingly of the unknown.—I am, etc.,

Havant, Hants. C. THACKRAY PARSONS.

Milk Certificates

SIR,—Now that school is about to start once more there is little doubt that a fair amount of milk certificates will be required for "sick children not attending school." Such certificates have to be renewed every week according to present regulations, which does not only burden the doctor quite unnecessarily but even more the mother of the sick child. In most cases of sick school-children the medical attendant is able to foresee a minimum period for which the child will have to be kept away from school—take the so frequent cases of measles, whooping-cough, or scarlet fever. The mother being usually the only person at home to look after the sick child (and perhaps a few more) it is certainly not only unnecessary but inadvisable that the mother should be obliged to go each week to the food office, leaving the sick child unattended in the house. I have known many cases where the mother has done without the milk rather than take that risk, particularly in winter with a fire burning in the house.

If doctors are credited with the ability and responsibility to issue milk certificates at all, surely they must be credited to with stating the period for which the issue of milk will be necessary. In the case of sick children I consider that of particular importance for the reasons stated, and I think it would be reasonable if the doctor could fill in the number of weeks for which extra milk would be required, say, up to six weeks at the time. In cases where no time is specified by the doctor the validity should be for one week as it is at present.

For class IIa a similar case could be made out, as very frequently the patient is left alone in the house while the other members of the household are going to work. A kind neighbour may bring some food and look in once or twice during the day, but nobody being able to spare the time to go to and queue at the food office each week (missing work means another medical certificate), the patient goes without his or her milk, which would be of particular importance under those circumstances.

The various certifications having been under renewed discussion lately in the *B.M.J.*, I felt that the time was opportune to raise this matter in your columns, and I am sure you will earn the gratitude of many people if you will see that representations are made to the Ministry of Food in this matter.—I am, etc.,

Gillingham, Kent. K. F. POLLACZEK.

Pure Anti-E Agglutinin in the Serum of an Rh-negative Woman

SIR,—In connexion with Dr. D. S. Dick's report on pure anti-E agglutinin in the serum of an Rh-negative woman (July 19, p. 95) the following case, taken from the records of the Sheffield Blood Transfusion Centre, may be of interest.

Mrs. C. Multipara. Group A, Rh-negative. Genotype cde/cde (June 11, 1946). Serum agglutinates R_1R'' and $R''R''$ cells: weak agglutination 1:512. No agglutination with R_1R_1, R_1r or $R'R'$ cells (Dec. 20, 1946). Children normal except Baby C. born on June 4, 1946 (haemolytic disease of the newborn). No history of blood transfusion or intramuscular injection of blood.

Baby C. Group A, Rh-positive: baby's cells are agglutinated by mother's serum.

Mr. C. Group A, Rh-positive: his cells are agglutinated by anti-C, anti-D, anti-E, and anti-c as well as by his wife's serum.

Mrs. C.'s serum contained pure anti-E agglutinin. The original investigations were carried out by Dr. E. F. Aubert and Mr. I. Dunsford. Their findings were confirmed by Dr. A. E. Mourant, of the Lister Institute.—I am, etc.,

Sheffield. R. H. MALONE.

New Treatment of Rheumatoid Arthritis

SIR,—With reference to the article by Dr. Imre Barsi headed "A New Treatment of Rheumatoid Arthritis" (Aug. 16, p. 252), I feel that there are a few points that need further elucidation.

First, there is no attempt to explain why a case of rheumatoid arthritis transfused with 300 ml. of blood from a pregnant woman should have lasting relief, while a pregnant woman with rheumatoid arthritis invariably suffers an exacerbation after parturition. Secondly, it is a pity that the follow-up of only six cases is given—what happened to the remaining 22 cases? Thirdly, there is no mention of any blood grouping having been carried out. Furthermore, three of the six cases reported had febrile reactions; in the other three reported there is no mention of the temperature of the patient just after the transfusion.

If the cases that derived benefit from this "new" treatment were the cases that suffered a febrile reaction to the transfusion, then I suggest that the improvement was due to protein shock, which has been an accepted form of treatment for many years.—I am, etc.,

Romford, Essex. M. D. WARREN.

Causalgia of the Face

SIR,—In reply to Mr. Patrick FitzGerald's letter (July 26, p. 150) I wish to thank him for referring me to Dr. F. D. Threadgill's paper (*Surgery*, 1947, **21**, 569). While appreciating its value I do not think that the results are conclusive with regard to possible afferents entering the cord via the sympathetic chain. On p. 572 he states: "The possibility that sensation had entered the cord via the anterior roots was recognized and a second preparation was made in order to prove that this had not happened." Later he states: "The result demonstrated that vascular reflex activity may be completed entirely outside the cord." It is not proven that the painful impulses noted prior to section of the anterior roots did not enter the cord by this route.

Mr. J. A. W. Bingham (Aug. 9, p. 228) refers to impulse transmission in nerve fibres following section. That they remain capable of conduction is, as an isolated phenomenon, common knowledge, but the question of adequacy of stimulation must also be considered. My use of the term "temporary paralysis in their peripheral course and distribution" was perhaps rather loose, but the word "paralysis" is accepted to denote that absence of normal sympathetic activity or tone which follows decentralization of the system, whether this is the result of section or blocking impulse formation or spread by "novocain" or nicotine.

I contend that blocking the sympathetic chain below the superior cervical ganglion as in Mr. Bingham's cases so alters the state in the periphery that stimulation as applied may have been inadequate. Two personal attempts to stimulate the peripheral end of the sectioned chain with a faradic current produced a diffuse pain response that could not be usefully correlated with the causalgic syndrome present.—I am, etc.,

Sale, Cheshire. C. H. CULLEN.

Acute Porphyria

SIR,—I have read with great interest the paper by Sir Adolphe Abrahams *et al.* (Aug. 30, p. 327). Acute idiopathic porphyria is not an uncommon disease, I myself having seen ten cases. Besides the finding of the typical urine, clinically the possibility of this disease must be considered in any case of obscure abdominal pain associated with constipation, dysuria, vomiting, and all the signs of spastic ileus, especially if accompanied by hyperaesthesia of the lower limbs before the onset of more marked neurological signs.

Between 1931 and 1933 I examined 141 cases of different diseases. In 65 cases of these (27 men, 38 women) excessive amounts of uroporphyrin or coproporphyrin were found. This group included meningitis, encephalitis, meningo-encephalitis, generalized herpes zoster, disseminated sclerosis, lead poisoning, pernicious anaemia, aplastic anaemia. The group with negative results included tuberculosis, endocarditis, pneumonia, cholecystitis, myeloid leukaemia, tabes dorsalis, diabetes mellitus, cured lead poisoning, thyrotoxicosis, etc. I confirmed these results in further investigations carried out at Westminster Hospital between 1935 and 1939. The number of positive cases during this period was 40.

Here I would like to stress the presence of excessive porphyrin in the urine in certain neurological diseases—e.g., subacute combined degeneration of the cord. In this disease the porphyria disappears when the blood count returns to normal. This was observed in 11 cases; in 8 of these uroporphyrin, and in the remaining 3 coproporphyrin, were demonstrated. In the acute stage of disseminated sclerosis uroporphyrin was found in 2 cases, whereas in the chronic form I was never able to find porphyria. Another group includes acute poliomyelitis, acute encephalitis (7 cases), non-specific meningitis (3 cases), and ascending poliomyelitis associated with the name of Landry. In all these cases excessive excretion of uroporphyrin was found in the early acute stage. Some of the cases of acute encephalitis started as acute idiopathic porphyria and led to Parkinsonism. It would appear therefore that the porphyrin must be neurotoxic and is to be connected with the pathology of the C.N.S.

Lastly, I would like to draw attention to the excessive coproporphyrin or uroporphyrin in the faeces. This can be observed in the acute idiopathic porphyrias. This increase in the faeces can also be found in cases of haemorrhage occurring anywhere between the teeth and the anus. This is of diagnostic value in haemorrhages from the oesophagus and the cardiac end of the stomach, when tests for haemoglobin or haematin, etc., fail. Then there is deuteroporphyrin. The presence of this porphyrin is always proof of a gastro-intestinal haemorrhage provided the patient is on a blood-free diet.—I am, etc.,

London, W.1. LEO RAU.

Mind and Matter

SIR,—I have just finished reading Sir Charles Sherrington's foreword to the 1947 edition of his book *The Integrative Action of the Nervous System*, and was provoked by the last few paragraphs to speculate along the following lines.

If we share McDougall's view (1936) "that where there is life there is mind; and that, if there has been continuity of evolution of the organic from the inorganic, there must have been something of mind, some trace of mental nature and activity, in the inorganic from which such emergence took place"; and if, furthermore, we agree with Stapledon (1939) that "it is not wholly inconceivable that every physical unit (say, every electron and proton) is the body of a very simple mind," then it seems reasonable to speculate that the universe is composed of

countless millions of "psycho-physical units" (that is, electrons, protons, neutrons, etc.), which are discrete forms of "psycho-physical energy." These "psycho-physical units" are found grouped together and combined in various ways. In certain circumstances they are said to be "organized"—that is, when they make up the bodies of living organisms. Under such circumstances the psychical features of these "psycho-physical units" are summated and reinforced, and this results in a greater or lesser degree of consciousness, which varies with the degree of complexity and nature of the organization. Thus, in the case of plants, although the degree of complexity of organization is often very great, its nature is such that there is little or no evidence of consciousness or other mental phenomena. On the other hand, in the case of animal life the nature of its organization is such that there is some evidence of mind in even the simplest forms. As the scale of animal life is ascended there is increasing evidence of consciousness and other mental phenomena, culminating in the self-consciousness of man. A consideration of the fundamental biochemical and biophysical differences between plant life and animal life may in time contribute towards the elucidation of the organizational basis of consciousness. In the realm of the non-living the constituent "psycho-physical units" are not organized (that is, in the biological sense of the term), and, correlated with this fact (or so it seems), their psychical features cancel out (or are merely not summated).

Can these mere speculations be developed into a coherent and consistent theory based on the results of experiment? It is possible that they can. In time it will no doubt be possible to "prepare" simple living organisms from previously synthesized organic compounds, and, once this has been achieved, the next step will be to devise means whereby these organisms can be evolved in the laboratory under controlled conditions. In due course it should be possible to evolve, experimentally, relatively complex living organisms, which will show some evidence of mind, from the very simple "synthetic" ones. If this should ever be achieved, the stage will then be set for the development of some such theory as the one outlined in the preceding paragraph, with a possible solution of the mind–body problem.—I am, etc.,

Liverpool. E. R. BANNER.

REFERENCES

McDougall, W. (1936). *An Introduction to Social Psychology*, p. 462.
Stapledon, O. (1939). *Philosophy and Living*, 1, 69.

Population Problems

SIR,—As a youth I saw my bit of English countryside infiltrated and destroyed by a new growth called "development." There were regrets, of course, but many up-to-date people accepted the change as evidence of the march of progress. After the first world war there was talk of a brave new world for heroes; but when a voice or two was raised to point out that such an achievement could hardly be possible in a country so grossly overcrowded as our own, the community took umbrage and the voices were silenced.

That was in the nineteen-twenties. In 1947, though lebensraum has certainly not increased, the campaign for more babies has been intensified, with the emphasis as usual exclusively on numbers. And, what is more ominous, this selfsame cry for more and yet more human material has spread throughout the industrialized world, still with the emphasis on quantity. As to quality we do not, apparently, give a tinker's cuss. What are the reasons for this insatiable demand for expansion? I would tabulate them as follows:

1. International competition: (*a*) Cannon and bomb fodder; (*b*) "Hands" to work the industrial machine.
2. Ideologies: (*a*) Totalitarian—slave labour provides cheap power for the use of the governors; (*b*) Democratic—universal franchise calls the tune.
3. The known disadvantages of an ageing community.
4. A tenet of the Roman Catholic Church.

I do not propose to dilate upon items 1, 2, and 4. I would only here suggest that the atomic age may have altered our calculations on item 1. No. 3 needs, perhaps, a little amplification.

The phase of population decline following a peak has its well-known drawbacks. An increasing proportion of aged people must be supported by a diminishing proportion of youth. There may be a diminishing demand for all those things that make the wheels of industry spin—manufactured goods, amusements, cosmetics, narcotics. But, whether we like it or not, the peak, with its subsequent slump, must come sooner or later. Moreover, the longer we postpone the evil day the greater must be the dislocation during the process of shift to a new balance. Therefore, why not get it over as soon as possible? It would, I fancy, be relatively easy to persuade people of the necessity for some sort of check on population, both quantity and quality. The real difficulty does not begin till we ask the question, How?

Nature's rough and ready checks on overcrowding, let us remember, are starvation and disease. They are crude, but they have worked, and now man has the power to control and perhaps soon to abolish both—disease by swatting the germs; and starvation, short, of course, of a world starvation, by means of mechanical transport. Is it then conceivable that, having taken on so much responsibility, we shall be permitted by nature to sit back, as it were, and leave this prime problem of quantity and quality not even to blind chance, but to a certainty of disaster? For we have to admit with shame that our present type of reproduction is steadily dysgenic.

I am not naive enough to believe that the National Health Service of to-morrow will do anything to stop this adverse trend. It might (though that is another story) improve the existing health of the existing individuals. But so long as the State Service continues along present lines it cannot improve our stock. On the contrary, the principle of free medicine and free food uncorrelated with eugenics does exactly the reverse. Improvement of stock can only come in one of three ways: (A) Free breeding, and no social services—i.e., the time-honoured methods of nature, wherein the duds are weeded out; (B) deliberate selection from qualities desired and rejection of those qualities not desired—this is what the farmer does, and it also works; (C) no active controls upon selection, but legislation to discourage the reproduction of definite defectives.

Now, one has only to set out this problem to realize the vast complexities and difficulties which obstruct its solution. But unless we grasp the nettle we shall inevitably be forced back to a state of nature, as under item A, and the change will be cataclysmic. As for B, it is worth remembering that Nazi Germany did make a genuine effort to tackle their population from the quality angle. I know they went about it in the wrong way, and the experiment ended in failure. None the less, it did contain a germ of truth which surely will not die.

The most, I suppose, that we can hope for is some sort of recognition for the merits of C. But to achieve even this in a democratic country will need an immense amount of preliminary education to win over a large enough body of opinion, and to make people see that the idea has nothing to do with "class." If a little less time was wasted by the radio on puzzles and games, and a little more time given to straight undramatized education on the foundations of life, some real advance might be made. And surely the medical profession ought to lend a hand, especially the G.P.s. People are still willing to listen to doctors, and that, by the way, is a great compliment to our calling.

We want the good life for all men of good will. We shall never get it, though, simply by increasing the staff of the Civil Service, and we certainly can never provide it for 40 million souls on this small island, whatever we do, not even if we make them all into millionaires. I doubt very much if more than ten millions could live and work and play in this small space without polluting the ground they trod on and destroying the peculiar delicacies with which England abounds. How little is left of the spirit and grace of an English country house after it has passed into public ownership!—I am, etc.,

Buxted, Sussex. W. R. E. HARRISON.

Ourselves and the Russians

SIR,—May I be permitted to express my admiration of the masterful manner in which you have refuted (Aug. 30, p. 339) the virulent, and withal somewhat peevish, attack upon the *British Medical Journal* in the Soviet medical periodical the *Meditsinsky Rabotnik*, by O. Radbil. The general tone of his article is the more regrettable since no authoritative journal has given such unstinted praise to, and recognition of, the admittedly magnificent work of Russian medical scientists as has the *B.M.J.* Most important is the fact you make abundantly clear to your readers that the chief cause of Mr. Radbil's vexation of spirit lies with the Russians, who themselves are obviously responsible for the great difficulty which is being experienced in obtaining their medical periodicals.—I am, etc.,

Petersfield. CHARLES M. BEADNELL, Surgeon Rear-Admiral (ret.).

Obituary

L. CARNAC RIVETT, M.CHIR., F.R.C.S., F.R.C.O.G.

Mr. L. Carnac Rivett, the well-known obstetrician and gynaecologist, died in hospital in London on Sept. 5 at the age of 59. Only a few months ago he was elected an honorary fellow of the American Gynaecological Society.

Louis Carnac Rivett was born at Stockport, Lancs, on May 21, 1888. Educated privately and at Trinity College, Cambridge, he graduated B.A. in 1909. He took his medical training at the Middlesex Hospital medical school and qualified M.R.C.S., L.R.C.P. in 1912. He was successively house-surgeon, casualty surgical officer, and obstetric house-surgeon at the Middlesex Hospital before obtaining the F.R.C.S. in 1915. In the following year he was successful in the examination for the mastership of surgery of the University of Cambridge, one of the most coveted of all surgical qualifications. There followed his appointment as obstetric and gynaecological registrar to the Middlesex Hospital, which was cut short by a period of service as a captain in the medical branch of the R.A.F. Towards the end of the 1914–18 war he was in charge of the surgical side of the Anglo-French Hospital at Le Tréport. Returning from active service, Mr. Carnac Rivett devoted himself to obstetrics and gynaecology. He was appointed to the honorary staff of Queen Charlotte's Hospital, and to that of the Chelsea Hospital for Women. He was on the staff of King George's Hospital, Ilford, Hounslow Hospital, the Royal Masonic Hospital, and the Queen Victoria Memorial Hospital, Welwyn. It was not until 1930, however, that he could be elected to the honorary staff of the Middlesex.

Mr. Carnac Rivett soon became well known as a dexterous and capable surgeon, an able teacher, and a lucid writer. He was examiner in obstetrics and gynaecology for the University of Cambridge, the University of Bristol, and for the Conjoint Board. He contributed to a number of medical textbooks, particularly *The Queen Charlotte's Practice of Obstetrics*, the first edition of which appeared in 1927, and he wrote many papers which appeared in this and in other journals. He was a foundation member of the Royal College of Obstetricians and Gynaecologists at its formation in 1929 and he served on its Council until he was raised to the Fellowship in 1936. He had been a member of the Chelsea Clinical Society and of the Hunterian Society for many years, and several of his contributions to the literature were read in the first instance to the Royal Society of Medicine. He had been a member of the British Medical Association for 27 years, and was honorary secretary of the Section of Obstetrics and Gynaecology in 1926. His death followed a long illness which he faced with dignity and courage. He will be greatly missed by his many friends and colleagues.

JOHN MARSHALL COWAN, M.D., D.Sc., LL.D.

We announce with regret the death of Dr. John Cowan at Kilmacolm on Aug. 15. The son of the late Dr. J. B. Cowan, regius professor of materia medica, and grandson of the late Robert Cowan, professor of medical jurisprudence in Glasgow University, his forebears were eminent doctors in Glasgow for 300 years. He was educated at Fettes, King's College, Cambridge, and Glasgow University. After graduating B.A. at Cambridge in 1891 and qualifying M.B., B.Ch. in 1895, he held resident appointments in the Western Infirmary, the Royal Hospital for Sick Children, and the City of Glasgow Fever Hospitals. In 1900 he saw active service in the South African War as a physician to the Scottish National Red Cross Hospital. He proceeded M.D. in 1902. On his return to Glasgow he settled in consulting practice and was appointed to the junior staff of the Western Infirmary and the Royal Hospital for Sick Children. At the same time he became attached to the University pathological department under Sir Robert Muir. It was there and in the wards of the infirmary that he laid the foundation of his work on cardiology. In 1906 he was appointed physician to Glasgow Royal Infirmary and, shortly afterwards, professor of medicine in Anderson's College. In the first world war he served as consulting physician to the Forces in Egypt and Palestine, retiring at the end of the war with the rank of colonel. In 1925 he was appointed physician to the King in Scotland. He acted as examiner in medicine for Cambridge, Manchester, and St. Andrew's Universities, and for the Royal Army Medical College.

John Cowan will be remembered chiefly for his work on cardiology, though he had a wide experience of other branches of medicine. He began his work on the heart at the time when Wenckebach and James Mackenzie were making revolutionary contributions to our knowledge of the subject. Basing his work on the pathological studies of his early years he made full use of the instrumental methods of gauging cardiac function which were then becoming available, but at the same time he recognized that machine-made records could not take the place of careful clinical observation. His textbook *Diseases of the Heart*, written in collaboration with the late Prof. W. T. Ritchie, forms an important contribution to our knowledge of the subject, based as it is on the personal experience of the joint authors. He also made numerous contributions to other branches of medical literature, the most notable of which were papers on the serum treatment of pneumonia. He was appointed George Gibson Lecturer at the Royal College of Physicians, Edinburgh, in 1926, and St. Cyres Lecturer at the National Hospital for Diseases of the Heart in 1930. Throughout his medical career he took an active part in undergraduate teaching. Though rather formal in manner, he gave systematic lectures which were of real value to the students. In his clinical teaching his watchwords were thoroughness and meticulous attention to detail. For his work as a physician and a teacher Glasgow University conferred on him the degree of LL.D. in 1937.

Cowan was one of a group of men who bridged the gap between the old school of pure clinicians and the modern school in which laboratory methods are being increasingly used to assist and, perhaps, at times to supplant clinical observation. While he fully appreciated the valuable help afforded by laboratory investigation, he always insisted that the last word must lie with the clinician. His rather aloof manner made him difficult to know, but all who had the privilege of working with him soon realized the generous and loyal nature that underlay the rather stiff and formal surface. He will long be held in grateful remembrance by many generations of assistants and students for the high standard of work that he practised himself and insisted on in those working with him. He was a man of wide culture and many interests outside medicine, a keen angler, and in his younger days a good shot. He married Maude Hamilton, who predeceased him, and had three children. His two sons, one of whom was in the Navy and the other in business in the East, are both dead; he is survived by a daughter.

S. H. DAUKES, O.B.E., M.D., D.P.H.

Dr. Sidney Herbert Daukes, who died at Worthing after a short illness on Sept. 3, was curator of the Wellcome Museum of Tropical Medicine and Hygiene from 1919 to 1926, and Director of the Wellcome Museum of Medical Science from 1926 to 1945. An expert in the organization of medical museums, he also wrote many novels under the pseudonym of Sidney Fairway.

The son of the Rev. S. Whitfield Daukes, he was born at Camberwell Hill on April 20, 1879, and educated at Lancing College and at Caius College, Cambridge, where he took a second-class in the Natural Science Tripos in 1900. From Cambridge he went to the London Hospital, and he qualified in 1905. He obtained the diplomas in public health and in tropical medicine and hygiene in 1912 and 1913 respectively, and proceeded M.D. in 1928. After some years in general practice at Beckenham he took up public health work and held posts in the school medical service at Leeds and Norwich. In the 1914–18 war he held the rank of captain, R.A.M.C., and served as a divisional sanitary officer in France. He was mentioned in dispatches and in 1920 received the O.B.E.

Dr. Daukes had his interest in museums and in graphic methods of education in medicine aroused by his experience as organizer of the War Office School of Military Hygiene at

Leeds. He wrote in 1919 a War Office manual on sanitation and contributed the chapters on hygiene in the official medical history of the war. The late Sir Andrew Balfour, Director-in-Chief of the Wellcome Research Institution, was impressed by the work carried out at Leeds, and in June, 1919, he invited Daukes to take charge of the Wellcome Museum of Tropical Medicine and Hygiene. In 1923 Daukes advocated the institution of a museum of wider scope, to illustrate the latest knowledge concerning diseases and hygiene, and to show the steps by which this knowledge had been reached. His plan was approved by Sir Henry Wellcome, and in December, 1926, the Wellcome Museum of Medical Science was opened with Daukes as its first director. Under his direction the Museum played an important part in the organization of exhibitions at home and abroad. Many of our readers must have seen some of his graphically arranged exhibits and may have wondered who was responsible for these essays in visual education.

As "Sidney Fairway" Dr. Daukes was a popular novelist. *The Doctor's Defence* was a best seller, and nearly as popular were *A Cuckoo in Harley Street* and *Quack's Paradise*. His last novel, *He Loved Freedom*, published only a few days before his death, deals with the reactions of a general practitioner to the changes brought about by the introduction of State medicine: "He sits at a big desk surrounded by Government forms and little rubber stamps." Dr. Daukes had also completed an autobiography, which is in the press.

Dr. ARTHUR JOHN BROCK died in Dunfermline on Aug. 25 at the age of 68. A native of Kirkliston and a graduate of Edinburgh University, Dr. Brock qualified in 1901 and proceeded M.D. four years later, after a brief period in Vienna and later in Berlin. He served as a captain in the R.A.M.C. in the 1914–18 war and became interested in what were then called cases of shell-shock. Returning to Edinburgh, where he had previously been in private practice, Dr. Brock continued to devote himself to psychiatry, and he became medical superintendent of the Garthhill Home. He will be remembered for his translation of Galen's "On the Natural Faculties." His chief interests were in medical history and particularly in Greek medicine, and he was also responsible for much geological and historical research in the North Queensferry district. He had been a member of the British Medical Association for forty years and was an occasional contributor to our correspondence columns.

Dr. ERNST LAQUEUR, professor of pharmacology at the University of Amsterdam, died on Aug. 19 at the age of 68 while on holiday in Switzerland. He was the discoverer of testosterone, and was responsible for important work on the standardization of insulin and oestrogens. He was on the committee of the League of Nations which established the international standards for oestrone and oestradiol benzoate. Dr. Laqueur served a term as dean of the University of Amsterdam, and in 1946 he was awarded the Berzelius Medal by the Swedish Medical Society.

Universities and Colleges

UNIVERSITY OF LONDON

The title of Professor of Bacteriology as Applied to Hygiene has been conferred on J. C. Cruickshank, M.B., Ch.B.Edin., in respect of the post held by him at the London School of Hygiene and Tropical Medicine.

Professor William Burns, D.Sc., M.B., Ch.B.Aberd., has been appointed to the University Chair of Physiology tenable at Charing Cross Hospital Medical School as from Oct. 1, 1947.

The title of Reader in Medical Mycology in the University has been conferred on J. T. Duncan, F.R.C.S., L.R.C.P.Irel., in respect of the post held by him at the London School of Hygiene and Tropical Medicine.

E. W. Walls, D.M., Ch.B.Glasg., has been appointed to the University Readership in Anatomy tenable at Middlesex Hospital Medical School as from Oct. 1, 1947.

A. E. W. Miles, L.D.S., M.R.C.S., L.R.C.P., has been appointed to the University Readership in Dental Surgery and Pathology tenable at London Hospital Medical College as from Oct. 1, 1947.

David Slome, Ph.D., M.B., Ch.B., Capetown, has been appointed to the University Readership in Physiology tenable at the Middlesex Hospital Medical School as from Oct. 1, 1947.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

The Honorary Fellowship of the College has been conferred on Dr. Victor Veau, the Paris surgeon, and on Dr. Robert Danis, professor of surgery in the University of Brussels.

Diplomas will be presented to Dr. Leopold Mayer (Brussels), President of the International Society of Surgery, who was awarded the Honorary Fellowship in December, 1946, and to the above newly elected Honorary Fellows when they are in London between Sept. 14 and 20 for the Congress of the International Society of Surgery.

EPIDEMIOLOGICAL NOTES

Poliomyelitis and Polio-encephalitis

The number of cases of poliomyelitis notified in England and Wales during the week ended Aug. 30 was 612. This is a slight decrease on the figure for the previous week (626). The notifications of polio-encephalitis were 45, as against 50 in the previous week.

The following counties showed a significant increase on the notifications for the previous week (figures in parentheses): Chester 21 (16), Essex 21 (12), Northumberland 21 (17), Staffs 13 (7), Sussex 13 (1), Isle of Wight 8 (3). Decreases were recorded in Durham 29 (33), Kent 8 (19), and London 77 (115).

In the week ending Aug. 23, 20 fewer cases of poliomyelitis were notified than in the preceding week—626, as against 646. The notifications in London increased from 89 to 115. The other large returns were Lancashire 65, Yorkshire West Riding 49, Middlesex 36, Durham 33, Surrey 26, Warwickshire 26. The largest returns for separate registration areas were London, Lewisham 18 and Camberwell 12; Lancashire, Manchester C.B. 15; and Warwickshire, Birmingham C.B. 14.

The Ministry of Education has informed local education authorities that, generally speaking, the reopening of schools should not be postponed. It is recognized, however, that there may be special local circumstances which would justify school medical officers or medical officers of health in advising postponement of the opening of particular schools.

Paratyphoid in Bedfordshire

A total of 45 cases of paratyphoid B (phage type 1) fever have been notified from the eastern half of Bedfordshire during August and early September. The first cases had a conjectured date of infection about July 11 to 15.

In four villages 22 of the cases are clearly associated with canned beef believed to have been infected about the end of July, after removal from the tin by the butcher's wife, who was subsequently found to be excreting paratyphoid B bacilli in her faeces. It is not proved whether she was a chronic carrier or contracted a symptomless infection at the start of the outbreak earlier in July. The remaining cases are scattered in about ten other villages, with no obvious link between them. Nevertheless they fall into a series which, in all probability, arises from a common source which persisted and is still being sought.

Notifiable Rheumatism

These regulations, which come into force on Oct. 1, 1947, will make acute rheumatism in children under 16 years of age a notifiable disease for three years in the county of Lindsey (Lincs) and the county boroughs of Bristol, Grimsby, Lincoln, and Sheffield. They are the outcome of a recommendation to the Minister of Health from the Rheumatic Fever Committee, which was appointed by the president and comitia of the Royal College of Physicians in April, 1946. This committee considered that the notification of acute rheumatism, continued for several years in two or three large areas with adequate facilities for diagnosis and treatment, might provide valuable information, hitherto not available in this country, on the present trend of the incidence of new cases, the relative incidence of new cases in areas of different types—e.g., urban and rural—and on the association of the disease with the various genetic, social, and environmental factors.

The definition of acute rheumatism in the new regulations comprises valvular heart disease of rheumatic origin and rheumatic chorea, as well as the acute manifestations in the joints and elsewhere which are perhaps better known under the term "rheumatic fever."

Annual Report for England and Wales

The Statistical Review of the Registrar-General for 1945 has been given priority over the Reviews for 1943 and 1944, which are not yet published. The crude death rate during 1945 was 12.6 per 1,000; when corrected for age and sex structure the

comparative mortality index was only 0.893, the lowest value ever recorded. The infant mortality, 46.00 per 1,000 related live births, rose slightly from the record low level of 45.44 in 1944. The death rates for children under 15 from diphtheria, 67 per million, and from scarlet fever, 7 per million, were the lowest rates ever recorded for these diseases. The notifications of measles, 445,412, were the largest since this disease became notifiable, but the death rate, 80 per million for children under 15, was below the pre-war level. Deaths from respiratory tuberculosis numbered 20,013, compared with 21,343 in 1943 and 23,660 in 1940. Notifications of dysentery rose steadily during the war years from 1,901 in 1939 to 14,728 in 1945, but only 156 deaths were reported.

Three new tables have been introduced. Fourteen infectious diseases have been analysed to show their sex and age distribution. A new series of standardized death rates for particular diseases, to compare with similar rates for Scotland, have been calculated. A detailed age analysis of deaths in the first year of life from the chief diseases of infancy, with particular reference to deaths under 4 weeks, has been included.

Births and Deaths in Eire

The following table shows the figures for the 13 principal towns in Eire each week from the week ending July 26 to Aug. 16, 1947. During this period there were no deaths due to dysentery, scarlet fever, smallpox, typhoid, or typhus.

Week ended:	Births	Deaths		Deaths Caused by				
		All Ages	Under 1 Year	Diphtheria	Diarrhoea and Enteritis (Under 2 Years)	Measles	Influenza	Whooping-cough
1947								
July 26	423	173	19	—	3	—	—	—
Aug. 2	365	184	31	1	1	—	—	3
„ 9	465	143	13	—	3	—	—	1
„ 16	363	168	21	1	8	3	1	1

Discussion of Table

In *England and Wales* the notifications of infectious diseases fell during the week. The largest declines were in the incidence of measles 1,190, scarlet fever 125, and whooping-cough 52. Small increases were recorded for dysentery 9, paratyphoid 6, and typhoid 4.

The decline in the incidence of measles was general throughout the country; the largest falls were Derbyshire 92, Glamorganshire 89, London 86. Counties with more than 100 notifications of measles during the week were Yorkshire West Riding 404, Lancashire 296, Glamorganshire 253, London 143, and Monmouthshire 113. A small decrease was recorded in the incidence of scarlet fever in most areas, but there were no large changes in the local trends.

Diphtheria remained at the lowest level ever recorded. During the past three weeks only 430 cases of diphtheria have been notified, compared with 779, 1,106, 1,236, 1,601, and 1,988 in the corresponding weeks of the five preceding years. The only change of any size in the local returns of whooping-cough was a decrease of 30 in Lancashire.

A further 8 cases of paratyphoid were notified in Bedfordshire, where 9 cases were reported in the preceding week. The chief centres of dysentery were Lancashire, Liverpool C.B. 12, and Devonshire, St. Thomas R.D. 8.

In *Scotland* there were falls in the notifications of poliomyelitis 14, measles 13, and scarlet fever 13, while increases were recorded for acute primary pneumonia 18, and whooping-cough 13. The largest fall in the notification of poliomyelitis was recorded in the city of Glasgow, with a decrease from 66 to 33. In the remainder of the western area there were more cases than in the preceding week—53 cases from 14 areas, compared with 34 from 9 registration areas.

In *Eire* the notifications of measles decreased by 30, but a rise was recorded for diarrhoea and enteritis 28 and for whooping-cough 13. These fluctuations in the trend of infectious diseases were mainly due to the experience of Dublin C.B.

Week Ending August 30

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 436, whooping-cough 1,618, diphtheria 164, measles 2,114, acute pneumonia 229, cerebrospinal fever 32, acute poliomyelitis 612, acute polioencephalitis 45, dysentery 85, paratyphoid 33, typhoid 11.

No. 34

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Aug. 23.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1947					1946 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	49	7	29	1	1	39	4	18	2	—
Deaths		2	1				—	1		
Diphtheria	147	11	41	13	12	285	16	77	29	7
Deaths	4	2	—	—	—	3	—	1	—	—
Dysentery	75	9	15	—	1	52	12	19	—	1
Deaths				—	—				—	—
Encephalitis lethargica, acute	1	—	—	—	—	2	1	—	—	—
Deaths		—					—			
Erysipelas			23	11	4			45	8	1
Deaths		—					—			
Infective enteritis or diarrhoea under 2 years				85					24	
Deaths	61	10	29	9	3	29	2	9	13	3
Measles*	3,278	143	30	224	3	2,140	161	60	14	4
Deaths	5	—	—	—	—	2	—	—	—	—
Ophthalmia neonatorum	79	10	8	—	—	82	5	20	1	—
Deaths										
Paratyphoid fever	23	2	2 (B)	—	—	66	2	7 (B)	—	2 (B)
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal	233	13	3	2	3	299	22	2	—	—
Deaths (from influenza)†	5	—	—	—	—	7	2	—	—	—
Pneumonia, primary			135	6				108	6	
Deaths		13		4	6		15		4	4
Polio-encephalitis, acute	50	6				1	1			
Deaths		—					—			
Poliomyelitis, acute	626	115	120	6	11	30	4	1	—	2
Deaths		5					—			
Puerperal fever		3	11		—		2	16		—
Deaths										
Puerperal pyrexia‡	150	8	13	1	—	138	11	14	1	—
Deaths		—					—			
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	489	39	101	17	15	665	53	128	18	7
Deaths	1	—	—	—	—	—	—	—	—	—
Smallpox	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Typhoid fever	12	3	4	5	5	36	2	—	5	1
Deaths	—	—	—	—		1	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough*	1,818	180	77	83	12	2,058	170	41	28	29
Deaths	8	1	1	2	1	8	—	—	—	2
Deaths (0–1 year)	320	43	65	17	13	308	45	45	41	15
Infant mortality rate (per 1,000 live births)										
Deaths (excluding stillbirths)	3,843	541	539	141	102	3,753	579	502	188	106
Annual death rate (per 1,000 persons living)			11·2	8·9				11·0	12·0	
Live births	8,378	1282	1025	407	249	8,394	1353	1010	394	263
Annual rate per 1,000 persons living			20·6	25·7				20·3	25·2	
Stillbirths	214	25	48			242	30	29		
Rate per 1,000 total births (including stillborn)			45					28		

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

Medical News

D.G.M.S., Ministry of Pensions

J. F. E. Prideaux, C.B.E., M.R.C.S., has been appointed Director General of Medical Services of the Ministry of Pensions in succession to Sir Walter Haward, O.B.E., K.H.P., M.B., who has retired.

Governor of United Provinces

The King has appointed B. C. Roy, M.R.C.P., F.R.C.S., Governor of the United Provinces in succession to Sir Francis V. Wylie, K.C.S.I., C.I.E.

New Institute of Animal Physiology

The Agricultural Research Council has decided to establish an Institute of Animal Physiology to gain information on the fundamental physiology of farm animals. The Council has appointed Prof. J. de Burgh Daly, F.R.S., Professor of Physiology in the University of Edinburgh, as the first director of the Institute. A site has not yet been chosen, but it is hoped that it will be so placed as to facilitate contact between scientists working in the Institute and those in a near-by university.

First Aid

The British Red Cross Society has recently produced an attractive and practical "A B C of First-aid Treatment" in the form of four placards for display at first-aid posts. The instructions are simple to understand and suitable for application even by those who know nothing of first aid. The cards should prove most useful in first-aid posts on the highway, at airfields and camps, at industrial establishments, and anywhere where accidents are likely to occur.

Venereal Disease Photographs

The Central Office of Information is prepared to loan to factories and other managements employing over 500 people a venereal diseases photographic display set. This display set was shown at a number of factories in 1945, when it evoked many favourable comments.

Microfilm Service

The Pasteur Institute of France has started a new microfilm service free of charge for all who require to study the literature on research methods and developments in bacteriology. Upon request the Institute will provide microfilms of any articles in the journals available.

Aid to Education

Unesco has launched a campaign to raise £25,000,000 for the rehabilitation of educational institutions in war-devastated countries. Assistance will be offered to Belgium, Byelo-Russia, Burma, China, Czechoslovakia, France, Greece, Holland, Iran, Luxemburg, the Philippines, Poland, Ukraine, and Yugoslavia.

Pharmaceutical Scholarships

The Pharmaceutical Society of Great Britain announce the following scholarship awards: the Jacob Bell Memorial Scholarship (£70 a year for one or two years) to Mr. Arthur Edward Lee, of Crediton, Devon; the Leverhulme Scholarship (£60 with a gold medal value £10 and £5 worth of books) to Mr. David Brian Cowell, of Hornchurch, Essex, and a second scholarship (£60 and £5 worth of books) to Mr. Stanley George Webster, of Wednesfield, Staffs; the Manchester Pharmaceutical Association Scholarship (£45) to Miss Audrey Rothwell, of Leigh, Lancs. The awards are made as a contribution towards cost of courses of various pharmaceutical examinations.

Surrey Hospitals Plan

The voluntary and municipal hospitals of Surrey, with the county borough of Croydon, set up a Joint Divisional Council in 1941. This Council produced a plan for co-ordinating and extending the hospital services in the county, which was the subject of an annotation last year (June 1, 1946, p. 841). In its Fifth Annual Report the Council has included a section which supplements the original plan and deals in some detail with ophthalmological, orthopaedic, dental, dermatological, and nursing services.

Wills

Dr. Herbert Henry Lankester, of Eastbourne, who died on Jan. 30, left £4,742. Sir Harry George Waters, of Stroud, Glos., who died on Dec. 19, 1946, left £12,725.

Dr. Alexander Rose, of Edinburgh, late of South Norwood, London, S.E., who died on Jan. 12, left personal estate in England and Scotland valued at £20,466. Dr. Thomas Norman Vickers Potts, of Spilsby, Lincs, late medical officer of health to the West Riding, who died on April 23, left £1,705.

COMING EVENTS

Pharmaceutical Conference

The British Pharmaceutical Conference will be held at Torquay during the week beginning Sept. 15. Papers to be read include the following: "The Hygroscopic Capacity of Commercial Samples of Penicillin and its Effect upon their Stability," by H. Brindle and W. Keepe; two papers on crystalline sodium penicillin G, the first by B. Johnson and A. F. Lerrigo, and the second by W. A. Woodard; "The Use of Antiseptics in the Sterilization of Solutions for Injection," by G. E. Davies and J. E. Davison; "The *d*-Tubocurarine Content of Curare," by G. E. Foster and J. V. Turner; "The Analytical Control of Pharmaceutical Preparations containing Vitamin B_1 and B_{12}," by W. F. Elvidge; "The Inactivation of Enzymes and Micro-organisms in Oils and Powders," by K. Bullock and J. W. Lightbown.

Discovery of the Electron

The Institute of Physics and the Physical Society will hold, in collaboration with the Institution of Electrical Engineers, a series of lectures and other functions in London on Sept. 25–26 to mark the jubilee of the discovery of the electron by J. J. Thomson. Sir Clifford Paterson, F.R.S., will give a lecture intended for a lay audience on "The Electron Liberated" at the Central Hall, Westminster, at 7.30 p.m. on Sept. 25. Free ticket of admission and further information may be obtained from the Institute of Physics, 47, Belgrave Square, London, S.W.1. Requests should be accompanied by an addressed envelope.

Army Psychiatrists' Reunion

The third reunion of Army psychiatrists will take place at Slater's Restaurant, 18–24, Kensington High Street, London, W.8, on Sept. 27 from 7.30 to 10.30 p.m. Full details may be obtained from Lieut.-Col. J. C. Penton, R.A.M.C., The Old Farm House, 1, Gatehill Road, Northwood, Middlesex.

Biochemical Society

The 260th meeting of the Biochemical Society will be held at the School of Biochemistry, Tennis Court Road, Cambridge, on Sept. 27 at 11 a.m.

APPOINTMENTS

Dr. T. Lloyd Hughes, Medical Officer for Middlesbrough, has been appointed to the Liverpool Regional Hospital Board.

Dr. Frederic Nugent Marshall has been appointed Senior Administrative Medical Officer of the Manchester Regional Hospital Board.

Dr. Marshall joined the Ministry of Health in 1936, becoming principal regional medical officer in 1942 and a senior medical officer in 1945.

EVANS, ROBERT, M.D.Belf., F.R.C.S.Ed., Honorary Assistant Surgeon, Birmingham and Midland Ear and Throat Hospital.

POSTGRADUATE DIARY

INSTITUTE OF LARYNGOLOGY AND OTOLOGY, 330, Gray's Inn Road, London, W.C.—Tuesday, Sept. 16, 4.30 p.m. Mr. E. D. D. Davis: Injuries of the Ear.

BIRTHS, MARRIAGES, AND DEATHS

The charge for an insertion under this head is 10s. 6d. *for* 18 *words or less. Extra words* 3s. 6d. *for each six or less. Payment should be forwarded with the notice, authenticated by the name and permanent address of the sender, and should reach the Advertisement Manager not later than first post Monday morning.*

BIRTHS

DUGUID.—On Aug. 26, 1947, at 94 B.M.H., Hamburg, to Dr. Mary Duguid (*née* Barry), wife of Major J. Duguid, R.A.M.C., a daughter.

HILL.—On Sept. 3, 1947, at Ashleigh Nursing Home, Gosforth, to Dr. Elizabeth Hill (*née* Troupe), wife of Dr. F. W. Hill, Newcastle, a daughter.

MACLEOD.—On June 28, 1947, at Headford, Co. Derry, the wife of Captain A. I. MacLeod, R.A.M.C., a son.

PRESTON.—On Sept. 1, at Croydon, to Margaret (*née* King), wife of Dr. T. W. Preston, a son.

ROBINSON.—On Aug. 25, 1947, to Sybil Elizabeth (*née* Weeks), wife of Dr. B. H. D. Robinson, Birmingham, a son—Charles Graham Francis.

VAUGHAN JONES.—On Aug. 28, 1947, at Blackpool, to Margaret (*née* Watters), wife of Dr. D. E. Vaughan Jones, a daughter.

MARRIAGES

CHRISTIE-ALLEN.—On Aug. 16, 1947, at St. Giles Church, Oxford, Alastair Malcolm Christie, M.B., Ch.B., to Hilary Joscleyn Allen, B.M., B.Ch.

ROBERTS—HOWELL.—On Aug. 29, 1947, at Epping, Kenneth Ivor Roberts, B.Sc., M.B., B.Ch., to Muriel Howell.

TIGHE—CREGAN.—On Aug. 9, 1947, in Limerick City, Eire, John Robert Tighe, M.R.C.S.(Eng.), to Nora Cregan, S.R.N., S.C.M.

DEATHS

DAUKES.—On Sept. 3, 1947, at Worthing, Sidney Herbert Daukes, O.B.E., M.D. (Sidney Fairway), aged 68 years, peacefully after a short illness.

THOMPSON.—On Aug. 24, 1947, at Wilton Grange, West Hartlepool, Vera Thompson, M.B., Ch.B., D.P.H.

Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions, which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Treatment of Shock

Q.—*What are the best drugs to give infants or children suffering from surgical shock? Is morphine contraindicated? If not, what doses are suggested?*

A.—Shock, whether from surgical or other causes, and whether in children or adults, implies a clinical state recognized by pallor and/or cyanosis, low blood pressure, and coldness of the extremities, which is the result of a disequilibrium between the functional capacity of the vascular compartment and the volume of circulating fluid which it contains. This may result from (1) an expansion of the functional capacity of the vascular compartment caused by a general vasodilatation as seen in various toxic states; (2) a loss of plasma, as in burns and other traumatic states; (3) a loss of intravascular water and electrolyte, as in dehydrated states; and (4) a loss of whole blood by haemorrhage.

It follows that the immediate treatment of shock should aim at the re-establishment of equilibrium between the intravascular fluid and the capacity of the vascular compartment. This in practice will generally mean the intravenous administration of plasma in (1), (2), and (3) above, and of whole blood in (4). The question of the dosage of plasma and blood cannot be summarized adequately, but the amounts of these substances given in the first instance should be related to the amounts roughly estimated to have been lost, bearing in mind that the plasma forms about 6% and the blood about 9% of the body weight (these proportions vary somewhat at different ages, but the figures given are adequate for the purpose).

It will be seen that, on this view of shock, morphine plays no important part in treatment, and this conclusion is fully confirmed by practical experience. Morphine should not, therefore, be given to shocked children. Analgesic drugs are found to be surprisingly rarely needed in traumatized children; probably pethidine hydrochloride will prove of use for this purpose. For sedation paraldehyde is useful in infants and young children, in whom 1 to 2 ml. for each year of age may be given intramuscularly. The barbiturates may be given orally in a dosage of 3/4 gr. (50 mg.) for children aged 2 to 4 years and 1½ gr. (0.1 g.) for older children; they become effective an hour or two after ingestion.

Rheumatism and the Weather

Q.—*A patient in the fifties is subject to "rheumatism" with myalgia as the predominant symptom. She has exacerbations coinciding with, and always about forty-eight hours ahead of, a fall in barometric pressure. These are followed in a day or two by small bruises over the painful points. Can you suggest an explanation for these phenomena?*

A.—The influence of "weather" on rheumatic symptoms has been recognized from time immemorial, but so far no satisfactory explanation has been forthcoming. Variations in atmospheric humidity appear to be important but not constant in their effect, though "fibrositis" seems to be more common in climates of high humidity. The forecasting of weather changes by an increase in symptoms is a common experience in those subject to this form, while the effect of high winds accompanied by barometric variations in increasing pain in the subjects of rheumatoid arthritis is commonly observed. On the other hand, injudicious exposure to sunlight is often followed by myalgic pain and stiffness. Electrical variations in the atmosphere have been suggested as an explanation, and this is a possibility calling for further investigation. In the present case the occurrence of exacerbations forty-eight hours before a fall in barometric pressure seems to support the electrical theory. The development of small ecchymoses suggests an increased capillary permeability or fragility, and a deficiency of vitamin K may be the explanation, though vitamin C may also have an important influence. Much work has been done in connexion with vitamin C, often with contradictory results; but it is well known that it is generally deficient in rheumatic conditions, and the study of its action in the case under consideration would seem to be worth while. Illustrative of the obscurity surrounding its action is the fact that Bicknell and Prescott, in their book on *The Vitamins in Medicine*, give no fewer than 880 references to the literature on the subject. Examination of the level of vitamin C in the blood at different times might be illuminating, and its administration in full doses would be worth trying.

Angina Pectoris

Q.—*A male aged 55 years suffers from aching pain and discomfort behind the sternum, radiating into the inner side of the left arm. It is not always present, but is liable to occur after sudden effort, and especially during work or anxiety. It subsides quickly with rest. There are no signs of a valvular lesion or of arteriosclerosis. Can this be true angina with no apparent cardiovascular disease?*

A.—The syndrome described sounds very much like angina pectoris. The sex and age of the patient, the situation of the pain, and its relation to effort are all consistent with this diagnosis. If the pain has the quality of constriction or oppression, if it never develops while the patient is at rest, if there are no associated symptoms, and if trinitrin tablets relieve the pain, the diagnosis of effort angina becomes practically certain. The account of this case suggests a higher centre element, and if pain occurs at rest in response to emotion spasmodic angina may be a more correct designation. In either event, some degree of coronary sclerosis almost certainly exists. It is usual for the pain of effort angina to pass off within a minute, or little more, when the effort ceases; the pain of spasmodic angina is often of rather longer duration. A clear account of coronary disease and angina pectoris is given in *Disease of the Heart*, by Sir Thomas Lewis (London, Macmillan).

Zinc-fume Fever

Q.—*Men who carry out the Schori metallizing process, by which a fairly thin film of zinc or other metals or substances—such as synthetic rubber or shellac—is sprayed through a flame spray pistol on to any metal or other surfaces, are said to suffer from what is described as "zinc disease." The symptoms have been likened to a malaria rigor, and consist of pyrexia, shivering, profuse sweating, and subsequent lassitude. Could you give me any information or references to literature on the subject?*

A.—Exposure to metal fume or to a fine spray of metallic particles in the process of metallization may give rise to "metal-fume fever" with the signs and symptoms described above. This is an old industrial disease and the textbook descriptions are usually those of zinc-fume fever. Full accounts are given in *Industrial Maladies*, by Legge, and in *Industrial Toxicology*, by Hamilton and Johnstone; both are Oxford Medical Publications (see also *Journal*, July 19, p. 120).

Thumb-sucking

Q.—*A male child aged 4½ years has been thumb-sucking since the age of 18 months. All the known remedies have been tried without effect, including admonition but not punishment. The child will hide in order to carry out the habit without being seen. Lately the act has been made worse by the inclusion of the fore-finger of the same hand stuck into the nostril. The upper incisors are being pulled forward and the child is tending to lisp. What remedy can you suggest?*

A.—To be effective the remedy must be based on the cause. The late onset of the habit, at 18 months, suggests that at this age there was some emotional disturbance that made this child turn to thumb-sucking for comfort; that he finds relief in this way is clear from the urgency that now drives him to hide in order to carry it out. Usually the sucking of thumb or fingers represents a compensation for real or fancied loss of maternal love; it may well arise on account of a temporary separation between mother and child, or through some physical or environmental stress that the child cannot understand. In these cases it may be necessary to disregard the habit for a while, and to concentrate on supplying the need that has induced it, at the

same time providing additional outlets in play or other acceptable activities, with all possible warmth of parental comfort. If home measures fail, the trouble is likely to be resolved without long treatment by psychiatric advice and child psychotherapy, unless there are special complications.

Terminating an Artificial Pneumothorax

Q.—*What is the usual method of ending an artificial pneumothorax? Can refills be discontinued suddenly, or should they be "tailed off"? In the case I have in mind the pneumothorax has been maintained for three years, and the disease shows no signs of activity at present.*

A.—The time and method of terminating an artificial pneumothorax depend very much on the condition of the lung before the treatment was started. Frequently the pneumothorax terminates itself by an obliterating fibrosis which gradually reduces the pleural space. When this does not occur spontaneously the cessation of artificial pneumothorax refills requires considerable care and judgment. It is not advisable to stop refills suddenly, but gradually to increase the interval between the refills and, if necessary, to reduce the amount of air introduced into the chest at each refill. Opinions differ as to the length of time an artificial pneumothorax should be maintained, but much depends on the presence of cavitation and a positive sputum previous to the induction. Cases in which these are present usually require longer treatment than those in which one or other or both have never been manifest. In any event, it is beneficial to maintain an artificial pneumothorax for three years and contemplate cessation of treatment in the spring of the fourth year, so that the patient has the advantage of the summer months in which to reach stabilization. In cases with considerable infiltrations before induction, it is best to allow the treatment to continue until it terminates by contraction of the chest wall and obliteration of the pleural space by fibrosis. It is, however, important to avoid a complete atelectatic lung which will not re-expand, and which usually calls for a thoracoplasty to close the pleural space.

Tremor of Hands

Q.—*A young woman has a constant fine tremor of her fingers and hands which is aggravated by excitement. There is no relevant personal or family history. Please advise me as to diagnosis and treatment.*

A.—The most probable cause to be suspected is a masked hyperthyroidism. Careful records of the pulse rate and of the weight are advisable, and also an estimation of the basal metabolic rate. An "essential" tremor is also possible; this is usually slower and coarser than in hyperthyroidism, and no tachycardia or increased metabolic rate occurs. There is no treatment for "essential" tremor; tremor due to thyroid overactivity responds to appropriate therapy.

Staining Films of Vaginal Discharge

Q.—*What is the best method of making and staining routine films of vaginal discharge when trichomonas is sought, if circumstances are against the preparation and examination of the more usual wet films?*

A.—Giemsa's stain is the most suitable; the film should have been fixed in osmic acid. Fluid vaginal secretion or a swab kept moist in a small volume of saline can be kept for several hours before the examination of wet films, without loss of motility; this is the method usually preferred unless circumstances absolutely preclude it.

Ringworm of Scalp

Q.—*What is the best line of treatment, short of depilation by x-rays or thallium acetate, for ringworm of the scalp? May I have details of the dosage and application of phenylmercuric nitrate and chloride?*

A.—There is a good review, with bibliography, of the use and dangers of the phenylmercuric compounds in the treatment of infection and fungous diseases by E. A. J. Byrne (*Journal*, Jan. 18, p. 90). For ringworm of the scalp of small-spore type in children, treatment must be accurate, diligent, and arduous, and is then attended only with a small percentage of successful results after long periods of treatment, according to most authors. Schwartz in the U.S.A. reported more success with 5% salicyl anilide in a carbowax base (*J. Amer. med. Ass.*, 1946, **132**, 58), but the supply is restricted in this country. Copper undecylenate in saturated solution in a carbowax base has also been recommended.

NOTES AND COMMENTS

Poliomyelitis and Chlorination of Water.—Dr. CLEMENT FRANCIS (London, W.) writes: The fact that chlorine in a strength of 0.2 p.p.m. destroys poliomyelitis virus in 10 minutes (Aug. 23, p. 317) interests me because my father, the late Dr. Alexander Francis, told me that when he was medical superintendent of a hospital in Queensland, 55 years ago, he found that the administration of chlorine water by mouth produced dramatically good results in patients with typhoid fever. He had a large number of cases to treat, as typhoid fever was then endemic in Queensland. There is evidence that poliomyelitis virus often gains entrance to the body by the alimentary canal and is discoverable in the faeces of patients and carriers, and there seems a good case for regular oral administration of chlorine water to patients in the early stages of the disease and to contacts and suspected cases. There is also no reason why chlorine water should not be sprayed up the nose and used as a gargle. The fact that London water was chlorinated during the war probably prevented a typhoid epidemic, and it would be interesting to know if the incidence of poliomyelitis in the present epidemic bears any relation to the areas in which the water supply is chlorinated. Poliomyelitis epidemics have occurred with much greater severity both in the States and in Australia than in the present outbreak in Britain, and here again the question of chlorination of the water supplies may be an important factor.

Chemical Contraceptives.—Dr. MARIE C. STOPES (Dorking) writes: May I supplement the answer (Aug. 16, p. 282) to the question on the above subject? No jelly can be reliable for several chemical and physiological reasons which I have set out fully in my textbook *Contraception, its Theory, History, and Practice*, for several war years out of print and now available again. Olive oil, however, is both cheap and most effective as a contraceptive if used soaked in a sponge. As contraceptives were high priced, as well as unsatisfactory, I founded the Mothers' Clinics years ago, and we supply for 1s. 2d. a box of 12 greasy "solubles" which are cheap and effective for use with caps.

Universities and Colleges.—Dr. J. D. SCOBIE (Stonehouse, Lanarkshire) writes: May I voice my disapproval of the terms of a recent advertisement in the *B.M.J.* Applications were invited for the post of medical registrar and it was stipulated that the applicant "must hold the M.R.C.P. diploma or the M.B. of a University." While realizing that any body is at liberty to lay down the qualifications necessary in a particular post I do not see how any good can accrue from differentiating from university and college men. The M.B. and college diploma have this in common, that they both come up to the requirements laid down by the G.M.C., and surely these should satisfy the most fastidious. In any case an interview usually determines the most suitable applicant. Furthermore, the M.R.C.P. is generally considered to be the highest qualification in medicine obtainable by examination and should not be considered to be equivalent to the M.B. If this sort of thing was carried to its logical conclusion preference would be given to the graduates of the greater universities over the smaller.

Correction.—There was an error in our first leading article in the issue of Sept. 6 (p. 374). Referring to the General Medical Council the phrase "but the great majority of its members are not chosen because they represent the universities and medical corporations which grant qualifications" should read "*are* chosen." Out of the 40 members of the G.M.C. 27 are chosen by these bodies.

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: *Aitiology, Westcent, London.* ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

Authors desiring REPRINTS should communicate with the Publishing Manager, B.M.A. House, Tavistock Square, W.C.1, on receipt of proofs. Authors overseas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

ADVERTISEMENTS should be addressed to the Advertisement Manager, B.M.A. House, Tavistock Square, London, W.C.1 (hours 9 a.m. to 5 p.m.). TELEPHONE: EUSTON 2111. TELEGRAMS: *Britmedads, Westcent, London.*

MEMBERS' SUBSCRIPTIONS should be sent to the SECRETARY of the Association. TELEPHONE: EUSTON 2111. TELEGRAMS: *Medisecra, Westcent, London.*

B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.